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PURCHASING

ITS ECONOMIC ASPECTS AND PROPER METHODS

BY

H. B. TWYFORD

OTIS ELEVATOR COMPANY

WITH

CHARTS, DIAGRAMS AND FORMS

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PREFACE

EVERY business establishment in the normal course of its operations has to make expenditures for various purposes to maintain its active existence. Divergent views exist as to the relative importance of these outlays. This is evidenced by the preponderance of educational efforts directed towards obtaining better results from the amounts expended for labor and selling expense, while other subjects are comparatively neglected or receive insufficient consideration. These studies in economics are having far reaching effects and it is the object of this book to draw the attention to a subject which has been but little touched upon in existing literature — the economies which can be effected by the use of efficient methods in the purchasing of materials, goods, and supplies.

Purchasing is one of the primary functions in the activities of the great complex structure we call business. The acquisition of raw material is the initial step incurred in the cost of manufacturing anything. In merchandising, a purchase must be made before a sale can be effected. In construction work, tools and equipment must be procured before workmen can commence operations. The significance of this subject is brought forcibly to the attention when it is realized that every undertaking in its inception involves the necessity of buying something, and the continuance of its activities perpetuates this important function.

It is easily conceivable that promiscuous buying would be a serious handicap to the success of any concern. It would render complete success unattainable, and the very existence of an establishment might be endangered and jeopardized. For the efforts of any organization to culminate in the most desirable fruition, it is a predominant constituent principle that its expenditures be properly regulated and made with wisdom, intelligence, and sagacity.

Among the most prominent characteristics which produced the commercial prosperity of this country were: large areas of fertile lands, enormous deposits of metals and minerals, and an enthusiastic and ambitious people. There are today three other factors which make necessary a thoughtful consideration of the future. These are: conservation of natural resources, competition, and the tendency to take life easier as evidenced by the agitation for shorter hours for workmen and longer week ends for employers.

The cumulative effect of these conditions has brought intensive economical operation into prominence, and it is apparent that this must be applied to every phase of business to a greater degree as time goes on. Regulated and right buying is a study in economics, and vast savings can be effected by efficient and proper methods of performing this vital function.

During a period when I was associated with one of his enterprises, an American financier with an international reputation, who was well known for the successes he had achieved in various undertakings, expressed some opinions to me on buying and the economic objects to be attained by proper methods.

Among other things, he said that his experience had taught him that the problem of spending money judiciously and to good purpose was a harder and more difficult task than the acquisition of it. At that time some of his views were novel to me and since they were the cause of considerable reflection on my part, they were possibly the nucleus of thoughts which eventuated in this effort.

He steadfastly held to the principle that a successful foundation for new enterprises, the growth of established undertakings, and the accretion to their resources is in a large measure dependent on the importance attached to, and the careful thought given to, the expenditure of all money for capital purposes, production, and supplies. He was unflagging in diligently scrutinizing and carefully weighing such expenditures, having in view the object to be attained and the practical utility of the result to be accomplished by the outlay.

Personal experiences and struggles with the problems connected with purchasing materials, merchandise, supplies, and equipment, and in organizing and conducting this department of commercial life, together with a close study of the interesting economic questions connected with it, are combined and represented in this book. It is hoped that some of the observations made or the information given may be of service and value to the reader.

H. B. Twyford

New York City,
April, 1915.

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PURCHASING

CHAPTER I

Principles of Purchasing—General Considerations

The Art of Buying

THE steady advance in the art of buying has been one of the determining factors in developing scientific salesmanship. It is no longer possible for a salesman to walk into a modern purchasing office, and carry away an order on the strength of a few persuasive arguments and statements regarding his goods.

Today the buyer sometimes knows more about the material than the salesman. He should certainly be better posted as to its suitability for his particular requirements. He has his inspection reports, laboratory analyses, and physical tests to guide him. He has records regarding past performances of material, quantities consumed, and probable future needs, also estimates as to the available supply in the market.

This information can be collected, tabulated, formulated, and reduced to exact knowledge — which is science. With this equipment the purchasing power is at its maximum, while the salesmanship required is at its minimum. Under these conditions the advantage is with the buyer, and the best results in the

matters of price, quality, terms, and delivery are obtainable.

To put this into practical effect, therefore, it is necessary to apply systematically the knowledge which the purchaser must possess. The information from which this knowledge is gleaned is acquired and stored by the purchasing department and will be dealt with in later chapters.

To emphasize the importance of this subject, reference should be made to Figure 1, where the consequences proceeding from a policy of indifference or carelessness are compared in parallel with the results which can be achieved by the efficient direction and operation of the function of buying.

A glance down the first column will demonstrate that severe losses must be incurred by the absence of a scientific system and the use of improper methods, while the economic benefits and larger profits to be derived from a reversal of this policy are set forth in the second column.

To secure these advantages it is essential that certain methods pertaining to and peculiar to the art of buying should be in force. These features are made a special object of study and an exposition of them is given. Coupled with these special features it is imperative that a proper system be adopted and put into practical effect and the activities connected with purchasing be governed with wisdom, intelligence, and sound judgment. These conditions prevailing, the highest standard of efficiency can be maintained and the complete benefits and advantages secured.

The illimitable ramifications of business are supported by their interdependence. It is an essential concomi-

Promiscuous Buying	Regulated Buying
Poor Prices	Lowest Prices for Quality Purchased
Inferior Quality	Highest Quality for Prices Paid
Purchases made in Excess or short of Requirements	Exact Quantities needed are ordered
Articles substituted for those actually bought	Articles purchased are those actually Delivered
Investment in Materials and Supplies excessive	Minimum Investment in Materials and Supplies
Erratic Deliveries	Deliveries made in accordance with needs
Unchecked, incomplete or excessive Deliveries	Exact Quantities ordered are Delivered
Improperly Checked and delayed Invoices	Properly checked and Promptly approved Invoices
Loss of Cash Discounts	Cash Discounts secured by passing invoices promptly
Duplicate Payment of Invoices	Security against over payments
Inefficient Service, Losses and Extravagances	Adequate Service, Economical Operation

FIGURE No. 1.—A comparison of the consequences ensuing from inefficient buying and competent buying.

tant to the building up of this complicated structure that the specialist in any one of its interrelated functions should acquaint himself, to as large an extent as possible, with the workings and accomplishments of the others. Purchasing is intimately associated and identified with many branches and divisions of business. It is incumbent therefore on the man who specializes in it to maintain his general knowledge on lines of the broadest conception to enable him to practice his art to the greatest perfection.

The Philosophy of Buying

Too often the question of price is made the determining factor in making a purchase without due consideration being given to the other phases of the transaction. Price and quality must be considered together. One sometimes bears an inverse relation to the other. High cost was formerly considered an indication of high quality, but for one's special and particular needs, the highest quality may be the cheapest. Conversely, a material which graded higher than the specification might not be equally serviceable for the purpose and prove the most expensive. Its exact measure of utility and therefore its value, is now determined on a more scientific basis than formerly.

The action of materials, during the manufacturing process and in the finished product, has been made the object of accurate study, and the information and knowledge gained from this study have enabled the engineers to draw specifications, which, when issued by the purchasing agent to bidders, have brought offers of material that will give the most effective results and be most serviceable.

The prime essential therefore is to purchase at the lowest possible price, the material which answers most fully to these requirements. Definite methods of testing should be stated. Specifications not enforced are worse than useless. A substituted material which had characteristics of higher intrinsic value than specified might not be equivalent to the specified material from a utilitarian point of view.

These are approximate definitions, and must necessarily be so in reviewing the subject in its relation to the whole field of buying, but each individual purchase can be weighed and examined with these considerations in view. If requisitions are received, and orders are placed without reviewing them, it is an inadequate method of procedure and is merely doing a commission house business. An indefinite number of specific instances could be given illustrating the importance of obtaining the right material at the right price, but each individual case has to be decided on its own merits and surroundings.

Common-sense, however, must be used in determining just what is to be done in the case of each purchase. With supplies of all kinds down to the most infinitesimal thing, there is always some one thing which is the most economical as a purchase for one's particular needs, but the amount involved may be trivial, and not warrant the expenditure of more than a very limited amount of time. There have been exhaustive experiments made with lubricants, when the annual purchases did not amount to as much as the cost of the experiments in the same period. But, where the consumption is large, it is imperative that the cost of the lubricant, the cost of material

worn from journals and brasses, and the cost of power to overcome friction, should all be carefully computed to arrive at the actual value for the specific purpose.

A large number of instances could be cited, but the above illustration will suffice to show that if a curve was kept of the usefulness of an article to the purchaser a curve of the proper price to be paid would bear a parallel relation to it.

Where the purchases of one class of material are sufficiently large to warrant it, the orders should be distributed between two or more concerns, as a measure of safety. For obvious reasons it is not advisable to have all one's eggs in one basket. This should not be done, however, at a sacrifice of price or quality unless there are extremely urgent and imperative considerations warranting such a course of action.

If the material in question is one of the essentials in production work, and the supply is coming entirely from one source, a serious dislocation of operations might ensue from the failure of this one source of supply from any cause, even if only temporary. For this reason, it is advisable, wherever possible, to draw supplies from as widely separated localities as the conditions will permit. The risk is then minimized from such causes as strikes, lockouts, and breakdown of transportation facilities. Dependable sources of supply being necessary to successful buying, it is imperative that the reliability and standing of the seller be known or investigated and his ability to perform the obligations he is entering into determined.

This brings into the subject of right buying the question of buying in such a way and in such places and from such sources as can be definitely and posi-

tively relied upon to furnish the goods and materials required at the time they are required, and in the quantity required, both of which are important economic factors in the operation of any establishment, or in the carrying out of construction work.

Buying at inopportune times or in excess of requirements is liable to entail severe losses unless there are compensating advantages in the matter of price. An accumulation of goods or supplies beyond what is requisite to keep the business moving along its appointed way, means that the following losses are incurred; depreciation, insurance, value of space occupied, and loss of interest on investment.

Personality in Buying

Personal contact between buyer and seller is not the potent factor it once was. This is due to the prevalence of more scientific conditions in buying. A perfectly satisfactory purchase can be put through without the two principals in the negotiation ever seeing each other. Personality is just as powerful as ever in the consummation of the deal, but it works on different lines. Business men will probably never cease meeting each other to discuss and close transactions, but personal contact in business is like personal combat in war, it is a waning influence in arriving at a decision. The tendency is in this direction in buying. Salesmanship is on a more impersonal basis than formerly. The great mail-order houses are examples of this, so are the slot machines.

A good buyer soon gets to know whether the seller has scientific and exact costs. If he has, the buyer can always tell when he has reached his bottom figure. A

man uncertain of his costs is uncertain of the price he quotes. In the case of the man who has exact costs, the buyer in negotiating might think he could call a bluff on him, and offer him the order at a reduced price. It would not be successful; there was no bluff; it did not exist.

Probably every successful buyer recognizes the principles of good buying, and although he may not have formulated and arranged them in his mind, nevertheless, he has undoubtedly a standard by which he does his buying, and maxims which he instinctively lives up to.

Some Present Day Methods

There are thousands of manufacturers in this country today who are doing hand-to-mouth buying with no well-developed scheme for making their purchases. They have some local jobber or near-by manufacturer supply their needs as required, sometimes almost day to day, with such things as a gross of files, or some emery paper, or a few bars of steel. Their contention is that it is not worth bothering about; the local jobber carries the stock for them, and that is worth the little extra money they pay him. They will also say they want to patronize the local dealers.

It is possible for them to continue to place their orders locally, but let them do it intelligently. Let them keep an accurate account of everything they use during one year, and the following year ask for quotations from the biggest and best manufacturers in the country. They will find they can save enough money to enable them to carry their own stocks and have a handsome profit left. They will not have to

place their order for a year's supply to be delivered at once, the sellers will make shipments almost as required. However, most of their orders will probably still go to the local jobber, because the result of this policy will be to awaken the jobber to the fact that he has not been buying right, and he will be able to get better figures, which will enable him to retain the business. It all resolves itself down to this, that thousands of manufacturers are letting some one else do their buying instead of doing it themselves, and that some one else may be a good buyer, but the chances are he is not.

Purchasing an Interesting Economic Study

The interest in the subject of buying is not confined to the inherent satisfaction which any man experiences when he has brought a negotiation to a successful conclusion. It is heightened by the wide field there is and by the constant changes taking place in all classes of goods as they pass through one plant after another. The numerous processes through which various materials go before final consumption, cause these to be considered by one manufacturer as finished product, while to another they are raw material. This is due to the great complexity of our manufacturing industries.

The enterprises not strictly of a manufacturing character, such as public utilities, mining, etc., cover a very wide field, and their activities require the purchase of supplies and material, equally as varied and complex as the manufacturing industries. For this reason a study of the subject offers great diversity

and is of particular interest and attractiveness. Men have specialized in various phases of the work, just as engineers and doctors have in their professions. The fundamental underlying principles, however, governing the conduct of the work and the methods employed for its accomplishment remain the same, whatever the nature and scope of the undertaking.

Economy of time and materials will never go out of fashion, and the saving which can be effected in the purchasing of materials, supplies, merchandise, and equipment, is an economic problem, the investigation of which will amply repay any person interested in it.

CHAPTER II

Functional Position of Purchasing Considered

Importance of Good Buying to the Success of an Undertaking

NO great commercial enterprise has been built up, or is continued in active operation, without the expenditure of large sums of money. Comparatively, this is equally true of every business large or small. This expenditure is in a measure a foundation, in a sense it may be said to be the corner stone, for without this the erection and superstructure of the enterprise cannot progress. The purchasing department of a business is the instrument through which a large proportion of the expenditure is made, and the success of the business will be affected by the amount of correct thought given to this department, and the judiciousness with which the purchases are made.

The success or failure of a business may be the direct result of good or bad buying. This is easily conceivable if one studies the consequences which either one or the other involves, as set forth in parallel in Figure 1. The importance of the function of buying can be readily understood from it, and any establishment indifferent to it would need to make enormous profits, have little competition, and unlimited capital to survive any length of time.

There is too great a tendency in some concerns to belittle the purchasing and treat it in a negligent and

offhand manner, but this is a very narrow view. It is, however, held by the heads of many of the medium sized and smaller industries who have perverted ideas as to the relative importance of the various sections of their business.

They will not spare expense in an endeavor to increase the results obtainable from the sales department, or to develop the effectiveness of the production division. There they can see tangible results, whereas their vision does not penetrate far enough in the other direction to appreciate the benefits to be derived from the scientific control of purchases. Without such control the advantages are intangible, but they can be brought out forcibly and succinctly by a complete and concise system, and the proper regulation of the buying and all that pertains to it. Results can then be set forth as clearly as in the sales or production department.

Many thousands of manufacturers hold views of buying which are detrimental to their interests, but fortunately opposite views are held by our national "captains of industry" and by all men who give business organization close attention. Studious reflection and investigation by others cannot fail to bring to them a realization of the importance and relative standing of this vital function of their business.

While stress has been laid on the importance of the function of buying, it must not be forgotten that it is a component part of the activities of the concern as a whole. Any purchasing agent having a distorted or exaggerated idea of the importance of the functions of his department, will not be able to do the most efficacious work in his sphere of usefulness, and will

unconsciously hamper the efforts of the heads of other departments, resulting in an unbalanced administration.

The Relation of Buying to Cost and Selling

The great importance of good buying is emphasized by the fact that a large percentage of the profits of any concern is absolutely and undoubtedly due to the ability of the purchasing agent to buy the best

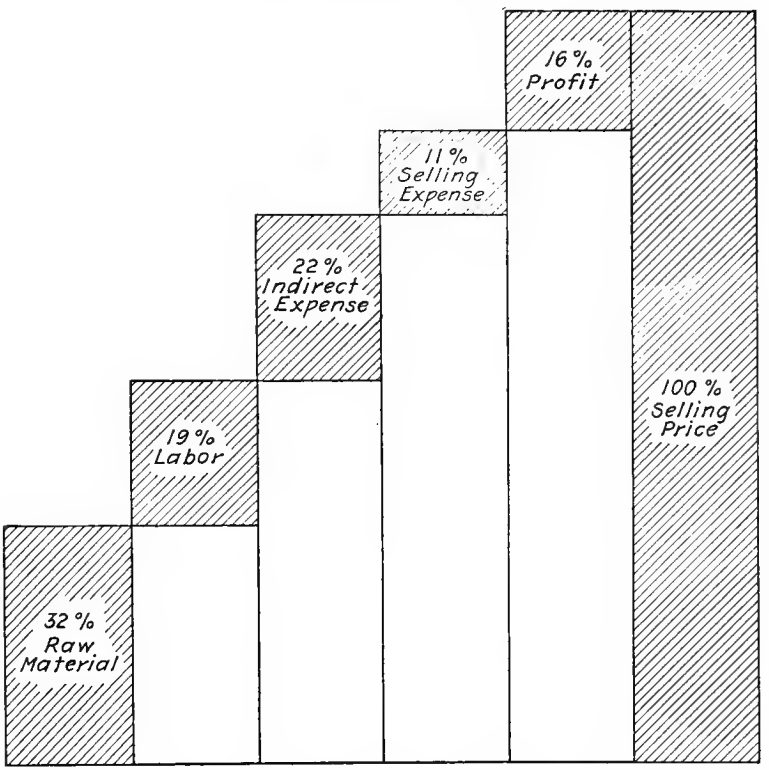


FIGURE No. 2.—This diagram illustrates the building up process of the cost of an article until the selling price is reached. Perhaps no two articles would show identical rises for each step but all would show a succession of unequal advances from zero to 100%.

from a utilitarian point of view for the lowest price. This is the first step in the profits.

Figure 2 indicates the five main stages by which a product reaches its selling price. Subdivisions of each stage could be given, but as an illustration for the present purpose the above is sufficient. It is made up from actual conditions existing in a manufacturing establishment, and serves to show the importance of starting right by buying right.

The acquisition of raw material is the initial step incurred in the cost of making anything and the relation of its percentage to the final selling price will depend on the nature of the output of the factory. If valuable metals are used for raw material the first step would be an exceptionally high one, but the reverse would be the case if cheap crude raw material was used and a highly finished product turned out. The production of almost any finished article means that the material in it has been bought and sold many times because manufacturing industries are interrelated to such an extent. This causes great variation in the cost of the raw material one starts with, but emphasizes the importance of closely watching the price and scrutinizing the quality.

It must not be forgotten that the activities of the purchasing agent do not end with the first step shown in Figure 2. Indirect expense includes considerable quantities of material used in maintenance and repair work. There are supplies of all kinds, such as oils, brooms, packing material, and office supplies. The selling expense includes stationery, catalogues, etc., therefore, buying is a factor in each of the stages shown.

Reference has already been made to the importance of so directing, arranging, and controlling all purchases, that without an undue accumulation of materials there should be at all times sufficient stock on hand to enable the production department to maintain its activities in unbroken continuity. This has a direct influence on the cost of a manufactured article, for the losses incurred through overstocking increase the indirect expense, as do likewise the losses sustained from an insufficient supply of materials and the consequent decrease in the output of the factory

Influence of Buying on Profits

Regulated and right buying is a study in economics. If one looks over the field of endeavor connected with production and manufacturing, and observes its tendencies during the past few decades, it will be noticed that intensive economical operation is applied more closely as time goes on, until a condition exists with many concerns, where they save their profits instead of making them, or rather they make their profits by savings. It does not appear that there will be any lessening of this tendency. This country, rich in natural resources, with a nation of born salesmen and advertisers, has, heretofore, solved the problem of getting more profit by making more sales. Conservation of natural resources and competition have forced a realization that an increase of advertising and selling expense will not continue to increase the business, in proper proportion to this increase of expense. Hence the necessity for reducing costs. Right buying strikes at the very root of the problem as its economic value has a vital bearing on the cost of production.

The profit on any manufactured article is not determined by the price as much as it is by the cost. The selling price is fixed by the demands of the public and competition. The first effort usually made to widen the difference between cost and price is to increase the output by encouraging the demand through advertising and more scientific salesmanship. When the limit is reached in this direction, recourse is had to investigating reduction of costs. In cost reduction, the principal attack is made on the labor item. In the days of primitive manufacturing, labor and material were the only two items considered in computing costs, but today labor costs frequently hold third place, indirect expense and material being the two which rank ahead of it. Efficient methods of reducing these should go hand in hand with the efforts directed at labor costs. To reduce the cost of materials, an effective system of buying is compulsory, if the best results are to be obtained.

Literature of Buying

If the catalogues of any of the well-known publishers of technical and scientific books are consulted, one can find plenty of books devoted to the problem of reducing labor costs, but comparatively little literature can be found on the subject of scientific methods of buying. It is an economic study which is deserving of more attention than it receives. In some of the books published on business management, due recognition is given to the subject, while in others it is treated in a cursory manner.

The paucity of literature on the philosophy of buying is further accentuated by taking a concrete case,

which will illustrate the relative importance of this subject to other allied economic studies.

It has already been pointed out that, in any finished manufactured article, the value of the raw material may have been insignificant compared with the labor costs. The opposite may be the case, especially where valuable metals are manipulated. The labor costs are then much lower than the cost of the raw material which enters into the product. Take for instance an article, the actual cost of which is sixteen dollars, that is, without any percentage added for indirect expense. Assuming that these sixteen dollars comprise nine dollars for material and seven dollars for labor, why should there not be an equal amount of educational literature directed to effecting a saving on the nine as on the seven dollars?

It is apparent that this is not done, yet it will invariably be found that the application of scientific methods in purchasing is equally beneficial in affecting a reduction in raw material costs as similar methods are in labor costs. No two industries will show the same proportion of labor and material entering into a finished product, but the foregoing is a fair assumption, and it seems incredible that one item is selected for criticism and discussion, and is made the subject of profound study with many volumes devoted to it, while the other is treated as a negligible quantity.

Constructive thinking in its application to the production department has been elaborated on in many volumes, and in the technical journals and periodicals. The literature on the art of salesmanship is voluminous and highly scientific. The problems connected with accounting methods have been analyzed and dis-

cussed exhaustively. The intricacies of finance have been sifted and examined, and placed before students of the subject in an interesting and attractive form. This is in contradistinction to the literature devoted to the philosophy and art of buying, which is neither extensive nor exhaustive, although it is a subject of equal importance and is an attractive and alluring study.

CHAPTER III

Ethics of Buying

Ethical Standards in Purchasing

ALL undertakings and enterprises which work in the field of manufacturing, transportation, or merchandising, whatever their scope, character, or nature, are divided into departments for administration purposes, and the greatest success which can be achieved in the conduct of the whole, is by the practice of the Golden Rule. It naturally follows, that to make this policy potently operative, each department must work in unity and conformation with it. In no section of the business is it more essential to keep this strictly in view than in the purchasing.

The maintenance of a high standard of conduct in purchasing raw material will have its influence on the conversion of them by the production department into the finished product, and on their final disposal by the sales department. The influence of this policy will permeate all transactions which may take place subsequent to the actual purchase of materials and supplies, or of goods for resale.

The old saying, "Goods well bought are half sold" has been interpreted in many ways, the construction placed on the word "well" being the bone of contention. It has frequently been asserted that "well bought" means cheaply bought, the inference being that, if bought cheap enough, a ready market can be

found at a profit. Also it has been construed to mean that it was a good buy, because a market existed where the goods could be quickly disposed of. Again it has been defined as obtaining material which was needed for manufacturing purposes, and of which a limited supply existed, the buyer congratulating himself on securing the articles in competition with another purchaser.

The expression "well bought" means all of these things and something more. The best has not been done, the maximum efficiency has not been reached, unless the purchase has been made with the knowledge, that there is a channel for its disposition, that the price paid is the lowest obtainable for the quality bought, and that *some good purpose has been served both buyer and seller* by the consummation of the transaction. To those who think this idealistic, it is none the less true, and particularly is it true where the other fellow's extremity is your opportunity.

A policy such as advocated does not preclude the use of every maneuver which has for its object the consummation of the purchase of goods and materials at the lowest possible price, or rather of the right goods at the right price. Until this object is attained every move which good diplomacy may suggest should be brought into play. The accomplishment of the desired end along such lines will redound to the credit of both buyer and seller, to the department, to the concern as a whole, and to the universal standard of business dealings.

Buyer and Seller

When the man with whom a negotiation is being carried on knows he is going to receive a square deal, his inclinations will tend towards giving one. There are skeptics on this point who will quote instances where contrary results apparently ensued from the adoption of this policy, nevertheless, if it is consistently followed, it will win in the long run. If what is generally known as "sharp practices" are resorted to by one party to a negotiation, it is not necessary for the other party to use similar tactics to combat them.

One frequently hears the expression, "There is no sentiment in business." Too often the meaning implied is that no unselfish motives exist. But this is not so. Evidence is abundant to the contrary. Many true friendships have been formed between buyers and sellers, but ulterior motives have been ascribed to them. Business acts are always accompanied by feelings and motives of some sort, and these are not wholly selfish.

It must be remembered that there are ethics of selling as well as of buying. Business houses of established repute will jealously and assiduously protect their reputations, and in dealing with them, mutual suspicion and distrust can have no place. The buyer with the highest standards of honor and conduct governing his motives and actions is going to be met in like manner, for the fundamental principles of both parties to the transaction will be identical.

Honesty is interpreted in Webster's dictionary to mean "A nice sense of allegiance to the standards of one's profession, calling, or position," and this is about

as good a definition as can be given of the purchasing agent's attitude, to his coworkers in the establishment, and to all men he meets in his multifarious duties and transactions.

Misrepresentation and Its Results

If by some trick or misrepresentation a seller has been inveigled into accepting an order by which he stands to lose money, he will invariably begin to figure how he can evade the terms of the contract either in quality or quantity, in such a manner as to deceive the buyer, to enable him to break even.

A loosely worded inquiry has been known to give a false impression as to quantity of goods required, and when sent out broadcast, has brought so many salesmen, some from long distances, to the buyer's office that the combined value of their time and expenses exceeded the value of the order.

This expense must eventually be charged to the cost of goods and paid for by the buyer. It is a problem which can be met by more scientific methods. There should be no intent to deceive, nor should the inquiry be sent for spectacular effect to firms who are not prepared to bid.

Contracts and Price Fluctuations

Every arrangement or agreement made between buyer and seller is a contract, and is in force until completed in accordance with its terms and conditions or until mutually abrogated. Price fluctuations have been the cause of many failures to live up to agreements, as have also other conditions, which have

arisen and intervened to the advantage of one party and the disadvantage of the other.

Unfortunately we cannot do business in the same manner as it is still practised by the Chinese in some parts of their country, where obligations to buy and sell are entered into verbally and the fulfilment strictly and rigidly adhered to even if the life of the agreement extends over a period of years, and factors have arisen in the meantime which are detrimental to one of the parties.

Competitive Bidding

The principle of competitive bidding must be kept alive; if it is abused it will react on the buyer and destroy this useful and necessary function to the general scheme of buying. Competition is the life of trade. If manufacturers and others quoting by solicitation are not treated fairly and impartially, they will soon become acquainted with the fact. Eventually this will prove detrimental to the buyer and render it impossible for him to maintain the highest standard of efficiency.

Quotations made by the seller to the buyer are for him alone and should be regarded as confidential. To disclose these prices to a competitor may seem to serve a temporary advantage, but eventually such a practice will hurt the purchaser and his concern.

Advantage of Prompt Payments

A purchase is always made with an agreed date for payment, and a scrupulous regard should be had for this and the obligation liquidated as specified. A

seller is entitled to his money exactly in accordance with the agreement, if he has fulfilled his part of the bargain. A concern whose purchases were very large, and who habitually held back payments even for a limited time beyond the agreed date, would be taking an unfair advantage and possibly putting the seller to considerable inconvenience. Some slight advantage might be gained by the financial department of the buying concern, but this would be more than lost in the purchasing department. It is a known quantity of power on the side of the purchasing agent, when the seller positively knows that the agreed date for payment will be strictly adhered to.

The Offer System

There are innumerable expedients familiar to every experienced buyer, the knowledge of which can only be gained by contact with the actual work. It would be impossible to enumerate them all, only some broad governing principles are given. Some are to be avoided. As an illustration there is the "offer" system. This is when a quotation has been given and it is the lowest that can be obtained and the order is offered at a still lower price. If habitually practised, all prices quoted will eventually be on a basis that can be scaled.

Purchasing and selling have built up the complex structure we call business, with its interminable ramifications. A finished article ready for consumption or use is the result of successive buying and selling just in proportion to the numbers of its component parts. This process goes back, widening and spreading until it reaches the original raw material. Is it too much to

ask that through all these transactions a standard of honesty should be maintained which will be recognized and accepted by everybody concerned?

Every purchase concluded on right lines strengthens the position of the establishment it is for, and is helping towards the attainment of perfection in business intercourse, the upbuilding of national industries, and international trade and commerce.

CHAPTER IV

The Purchasing Agent

Factors and Conditions Connected with his Work

THE development in the art and importance of buying has brought into prominence the men in charge of this work, and they now hold a recognized position of distinction and consequence in all commercial undertakings.

It has been stated that there is no such thing as scientific buying, but that good buying is the result of intuitively knowing when and how to do it, which, with a combination of luck, makes a successful buyer. It can be admitted that with this equipment a successful gambler may be evolved, but intuition is too vague a qualification for the purchasing agent of any establishment, large or small. There is a great deal more necessary in the make-up of any man who has charge of such work as is being considered here. He should have good judgment, be well balanced, shrewd, sagacious, and well fortified with the knowledge which he can scientifically accumulate; this, broadened and improved by a close study of local and national conditions, will make a purchasing agent a valuable asset to any concern.

The unique position occupied by the purchasing agent brings him into close touch with all departments of a business. For this reason he is often more intimately acquainted with its life, growth, and devel-

opment, and has a better knowledge of its needs and requirements, than probably any other department head in the concern. From this it can be deduced that the purchasing agent has opportunities enjoyed by few other men in the organization for attaining the highest executive positions. In some large corporations the purchasing agent is created a vice-president and director in recognition of his abilities and owing to the importance attached to the operations of his department.

One man is not always wholly responsible for the purchases made by any large establishment, but on one man the responsibility does rest to a much larger degree than on any other, and that man is the purchasing agent. The engineer or the expert specifies the material required in many cases, while in others the man who actually fabricates the article may have to be consulted in the selection of the most suitable grade. In the purchase of tools and implements, the nature of the work, the conditions under which they are to be used, the material they are to operate on, and a knowledge of the men who are to use them, must be a predominant consideration in making a purchase, and consultation would be necessary with the man who is to have charge of their operation. In buying goods for resale, other considerations must necessarily be thoughtfully and thoroughly weighed. It is axiomatic, therefore, that the man in charge of these purchases must be tactful and diplomatic in his dealings with the other men interested, and in addition he must, to obtain the best bargains, possess good business training and be a keen student of market values.

The general principles which should govern the actions of the purchasing agent are the same, whatever the nature and size of business. To obtain the best results, he must be a man who is able to meet other men without arousing their animosity, for to be on a good footing with the men with whom deals are being made is a great advantage. Men will do for friendship what they will not do for financial gain. One of the surest ways of arriving at a good understanding with the salesmen is to be able to talk with them about their own goods, and a man who can do this intelligently will be able to make better deals.

While the methods in vogue, the organization, and the routine work of the purchasing agent's office, are of great importance to its successful operation, it is essentially through the character and make-up of the man in charge that the best results are obtained.

In appraising the services of a purchasing agent, the assertion has frequently been made that he buys as low as is possible, the assumption being that this qualifies him as a most capable man for the position. Outside of the purchasing agent's office, and in other departments of the business, the matter of price is too frequently looked upon as the great or only desideratum. While admitting that this is a consideration which must never be lost sight of and is of supreme importance, nevertheless it is imperative that in conjunction with the question of price other questions must be brought into the calculations when a deal is being made. The quality and suitability of the goods for the particular purpose for which they are needed must be considered. The reliability and standing of the seller must be known or investigated,

and his ability to perform the obligations he is entering into, besides many other factors which will be referred to in a later chapter, and which need the calm appraisal of a well-balanced mind.

Shrewdness is essential to the purchasing agent, and tactfulness will help him over many rough places and assist in the consummation of many advantageous transactions. Tact has been described as doing the right thing at the right time, and is probably more essential in this department of the business than in any other.

Technical knowledge is a great advantage, but cannot be relied on to develop a successful buyer. The vast amount of technical knowledge acquired by architects, engineers, physicians, and lawyers, carries them to certain fixed points or niches in their professions; but the men who have achieved the greatest successes, or rather who have acquired the greatest financial gain, are those who have had the commercial instinct working in their make-up in combination with their scientific knowledge.

Technical knowledge without common-sense would be of little benefit. In fact, common-sense is perhaps the highest requisite for a purchasing agent to possess, and this qualification combined with energy, directness, honesty, and hard work will prove irresistible.

Matters on which the Purchasing Agent should be Posted

To formulate anything like a complete statement of what a purchasing agent should know, would be something like compiling an encyclopedia. Some of the points on which he should be informed have been

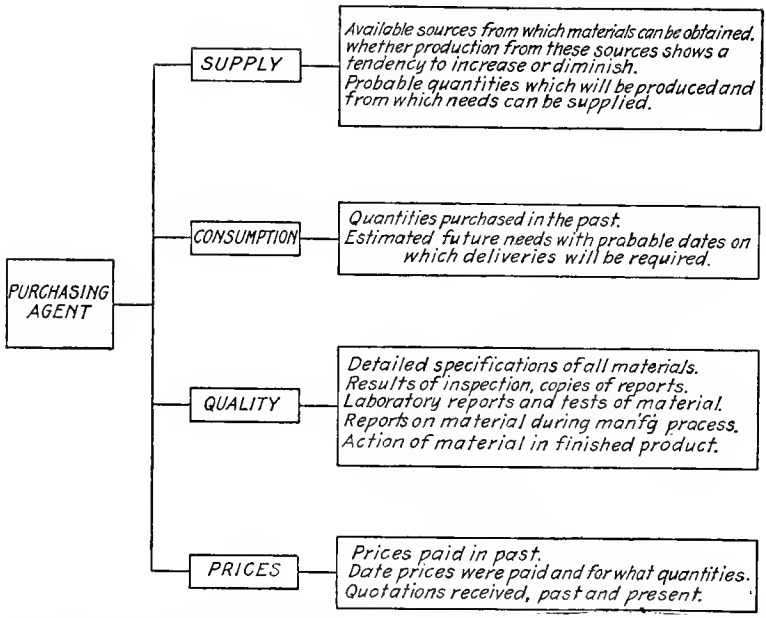


FIGURE No. 3.—A diagrammatic synopsis of the various matters on which the purchasing agent should have information when he is making a purchase.

already alluded to, but in actually making a purchase there are certain fundamental facts upon which he should be well posted, and which are categorically set forth and tabulated in Figure 3. His organization and system will keep this information and these data in a state of efficient preparedness and ready for reference at all times. But it must be remembered that there is no finality to this work. Somebody has said that "Acquired knowledge is only elementary compared with the vast fund of information which is yet undiscovered." This applies with force to the information necessary in a purchasing agent's office.

Purchases can be divided roughly into four great classes:

1. Purchases for productive work.
2. Purchases for resale.
3. Purchases of supplies, tools, and implements.
4. Purchases for capital account.

In all of these the purchasing agent is an important determining factor. In the first three he should be the final arbiter and have the deciding voice. He should conduct and conclude all negotiations affecting price, terms, and delivery.

In the matter of capital outlays, the purchasing agent should always be consulted. If he is a man who has a broad conception of his job, his judgment should be valuable in arriving at a decision as to the advisability, the manner, and the most opportune time to make an investment, whether it is in additional real estate, a new building, or better facilities for carrying on the business of the undertaking, should it be a trunk-line railroad, manufactory, or mercantile business. In this connection a knowledge of prevailing financial conditions will be of service, the causes which have brought those conditions about, and the probable future tendency. This opens up a very wide area for research work by the purchasing agent, and an unlimited scope for the acquirement of knowledge useful in his field of endeavor.

If information is on file as indicated in Figure 3, it means that the purchasing agent is posted and ready to go into the market to buy at any time fully prepared. He knows exactly

1. Where he can obtain what he needs,
2. The quantities he needs,

3. The quality he must have, and
4. The price he should pay.

These are the four main considerations to enable him to make a satisfactory purchase. Further explanation a little more in detail follows.

1. Statistics are compiled of all those commodities which affect the prosperity of the country and are deemed of national importance, such as wheat, cotton, copper, etc., and information as to the visible and invisible supply is kept on file by those houses trading in them. Most purchasing agents are interested in some particular material or commodity, about which he should have information as to the probable quantities on the market and what will be available in future. It may not be possible to obtain exact data, still much information that is valuable can be accumulated and put on record. This will be essential to him in negotiating for additional purchases, for a surplus or shortage in the supply will affect the price.

2. All facts connected with consumption in the past should be on record, as on this will be based some calculations as to future requirements. Additional information can be obtained from other departments of the business as to the estimated quantities that will be needed and probable dates on which deliveries will have to be made. There will also be the maximum and minimum limits for guidance. These data can be ready for reference at any time a question should arise as to the advisability of making a purchase. Whenever a requisition is received the exact quantities and delivery dates will be definitely known.

3. In some plants there is an engineer of materials, who inspects standardized material and also approves

substitutes which may be offered. He may also have control of testing machinery and laboratory. This may be independent of production or purchasing departments. Individual conditions will determine the advisability of this, but full information should be on file in the purchasing agent's office. In other cases one of the many firms of reputable inspecting engineers may be employed to inspect and furnish this information. Through these sources the purchasing agent can be accurately and fully informed regarding the physical and chemical properties of almost anything he buys largely. Such things as coal, steel, cement, varnish, paint, etc., are constantly tested by large buyers.

4. The three considerations mentioned will influence the price to be paid. The fourth is the prices on record, and in conjunction with the first three, it will form a sure basis and guide. Quotations received should be recorded and kept up to date. If it is necessary a price curve should be kept, as this is much more illuminative than a tabulated list of figures. It is still more instructive if a price curve and quantity curve can both be kept. A later chapter will give more details with forms for keeping and recording these data so as to make them available at any time.

If a diagram is made showing the steps by which the selling price of an article is arrived at, it would show a progressive but unequal series of rises from zero to 100 per cent. This is shown in Figure 2 in the last chapter.

Each step represents a percentage of the selling price, and a purchasing agent should know enough

of the cost accounting of the factory to enable him to trace the part the purchases play in fixing the selling price. It is better to have an intelligent idea of this than to be working in the dark. All persons in the organization do better work if they are interested in the final result, and this creates an ambition to make the best showing in their share of its activities.

Another problem which is constantly before the purchasing agent is the question of dealing intelligently with the many substitutes which are offered constantly in place of materials in use. He should, therefore, be sufficiently well posted about the business to know whether those offered are worthy of being tried out. No buyer can afford to ignore the many things which are offered at apparently attractive prices, and a knowledge of the products manufactured is necessary to enable him to discriminate.

The Principal Functions Covered by the Purchasing Agent's Activities

It has been intimated in the earlier portion of this chapter what the purchasing agent has to do in general, but in the actual carrying out of his executive duties it is necessary to be specific. Figure 4 illustrates the main divisions of the work which he must supervise.

In large establishments the stores and traffic may be entirely separate departments, but even so the purchasing agent has an interest in their work. The economic value of a good purchase might be lost, if no adequate means existed for receiving and storing the goods, or if an excessive freight rate was paid, or if delayed in transportation.

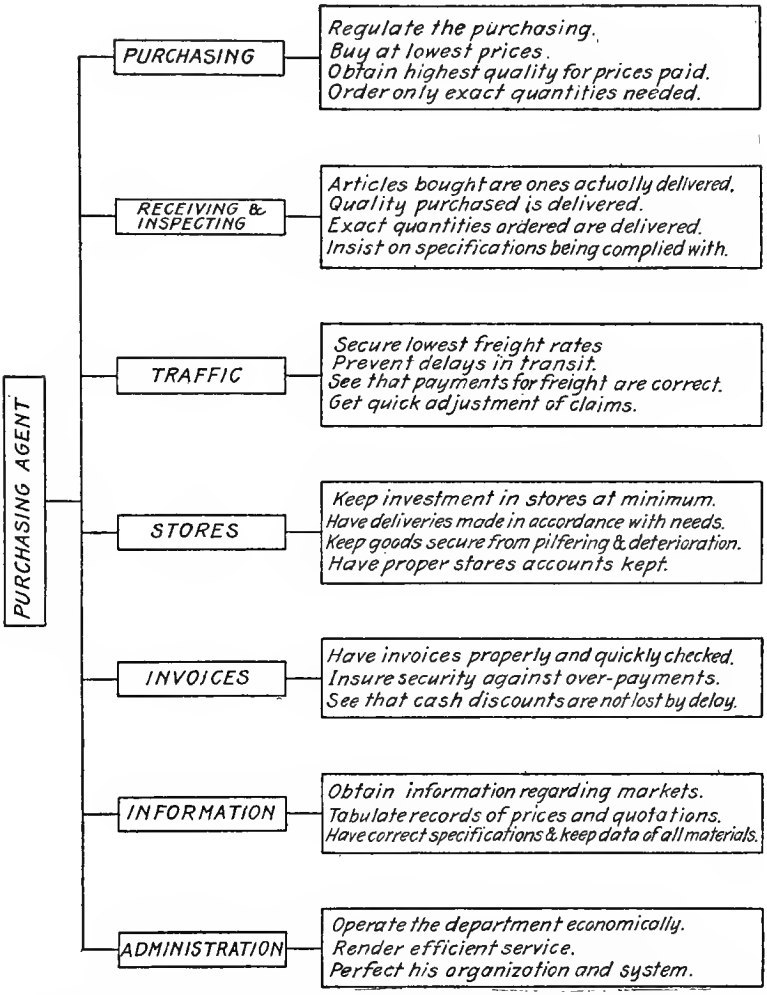


FIGURE No. 4.—A diagram showing in tabular form the main divisions of a purchasing agent's work and the principal details of each division.

In very small plants one man may have to cover all of this work, but they are still distinct divisions of his activities. In large undertakings the purchasing

agent will have the necessary assistance to carry through the work expeditiously and efficiently. By the aid of his assistants he must accomplish the various functions of his department, and to do this in the right way he must have such men as have suitable characteristics for the division of the work he allocates to them. He must organize them into a comprehensive whole, and arrange a system that is as simple as possible for the proper execution of the work. If the purchases are for a manufacturing establishment, one thing should be remembered, and that is that rush orders have no place in a well-regulated factory and stores system. Such orders dislocate the work of the purchasing office and are not conducive to good buying.

The purchasing agent should at convenient intervals visit his principal sources of supply. This will be found exceedingly valuable as an adjunct to the information he has acquired through his regular channels, and give him a point of view which he could not obtain in any other way.

The tabulated list in Figure 4 will not be discussed in detail here. This whole book covers the duties of the purchasing agent, but that tabulation puts them into succinct form for reference at a glance.

Definition of the Purchasing Agent's Authority

A clear definition should exist as to the authority of the purchasing agent to commit his company to extensive obligations. The writer has before him the copy of the regulations of a large corporation, and in reference to the purchasing agent the wording is as follows:

"The purchasing agent is charged with the purchase of all materials and supplies. A requisition signed by the head of a department shall be sufficient authority for the supply of materials which *in the opinion of the purchasing agent* are necessary for the execution in the ordinary course of the duties with which they are charged."

It will be seen from this that the onus of responsibility is thrown on the purchasing agent. He therefore has to be a man of strong character, and to be able to decide what is necessary. Cases have been known where the "heads of departments," who are sometimes only foremen, have been in the habit of requisitioning entirely unnecessary and useless material, involving the concern in severe losses. It is therefore essential that limitations should be placed on the men who draw the requisitions and there should be regulations governing the authority of the purchasing agent in the exercise of his duties.

In certain circumstances and under certain conditions it is possible that no restrictions or limitations need be placed on the purchasing agent, other than those which the size of the business and its well-known requirements and necessities would practically automatically enforce. But in such cases he must have a knowledge of the financial resources of the concern.

In the case of a large corporation whose finances are a special study, and which is a borrower more or less all the time, limitations must be in force. These limitations should be governed by the nature of the purchases and the purpose for which they are intended. An amount can be stipulated for general monthly purchases, and while they remain below

that figure the purchasing agent should have a free hand.

If there are exceptionally large purchases to be made, and the material to be bought is required for carrying out a contract into which the corporation has entered, then it should be a matter for consultation between or reference to some other officials. The treasurer, sales manager, or production manager may have to be consulted or possibly all three.

When large expenditures are contemplated for machinery and equipment, it may be necessary to get an authorization from the directors. A policy of this nature brings together the heads of departments interested and the relation of the actual requirements of the corporation to its financial resources are brought into harmony. When the decision has been made to go ahead with the purchases, the purchasing agent should be left in sole charge of the negotiations.

The treasurer of a company can only pay out the funds on receipt of a properly accredited voucher, and it does not seem good business policy to place the purchasing agent in a position where he can obligate his company to an unlimited amount on the receipt of a requisition from an irresponsible foreman or department head. Some scheme to regulate this should be outlined in every business, modified to conform to its nature and scope.

Relation of the Purchasing Agent to Other Department Heads

Mention was made of the advisability of the purchasing agent visiting his sources of supply, which enables him to post himself on many things which he

cannot get through the ordinary channels, and likewise gives him an opportunity to study at first hand the manufacturing and business methods of the people he is dealing with.

Similarly, it will be of great benefit for him to see at frequent intervals, the heads of departments from whom he receives requisitions and confer with them on their needs and on any matters which arise in connection with the purchases he is putting through for them. A much better understanding is arrived at in this way than through messages and correspondence, a mutuality of feeling is created, and a reciprocal tendency established to help each other, which will be found of great advantage. This is particularly the case in overcoming shop prejudices, and in those situations where long use has caused another department to grow accustomed to a certain kind of material, when there are others in the market equally as serviceable and by the use of which savings can be effected.

The diagrams given in this chapter (Figures 3 and 4) are intended to illustrate in a condensed form the two salient features of a purchasing agent's activities. First he must know certain things and secondly he must do certain things. But on both of these points he can render himself and his department more valuable to the establishment by acquiring from the heads of other departments a more intimate acquaintance with their requirements and collaborating with them in their legitimate aims. This is something beyond what appears on the face of the ordinary mundane requisition and cannot be tabulated or put into diagrammatic form. This is comparable to the

purchasing agent getting better acquainted with the concerns to whom he gives orders. He is then on the best footing with the people for whom he is buying and from whom he is buying.

It is the custom in some establishments for all communications between departments to be written, but this can be carried to an extreme where it is wasteful of time, effort, and stationery. For certain matters it is necessary, but beyond what common-sense dictates as essential, it should be discouraged. The good judgment of the purchasing agent should determine how far this should be carried.

CHAPTER V

The Purchasing Department

IN reviewing or discussing the function and activities of a business or one of its departments, the subject can be divided under four headings:

1. The consideration of the work as a whole, the various phases of it, and in what manner it can be divided to obtain the most efficient results.
2. The organization of the personnel of the department to take care of the work of each division.
3. The system or method of procedure to be followed by the employees in doing the work allocated to them.
4. The actual operation, with the necessary forms for carrying out the work.

In this chapter, the first of these will be dealt with, each of the others being the subject of separate chapters.

The Department's Sphere of Usefulness

The purchasing of materials and supplies was originally segregated because the activities of the undertaking demanded the undivided attention of one or more persons for this purpose. The organization of establishments into departmental formation naturally demanded that the functions of buying should be recognized. Thus was created the purchasing department, and it now has a fixed and permanent position

in commercial life. It has enabled the other departments to devote their whole time to their special work, and has proved its own existence to be necessary by the economies it has been able to effect, and by the usefulness of its work, and the great benefits derived from the systematizing of purchases. Its growth in efficiency will more fully demonstrate this.

There is no manufacturing process so simple that it does not require a great variety of material and supplies to maintain its active existence. This is true also of most of our public utility companies and engineering enterprises; and in order that the best interests of the undertaking may be served, the purchase of everything needed by each department should be centralized, and never delegated to several persons scattered through the various sections of the establishment. Even where a concern has a number of factories, or work going on in widely scattered parts of the country, there should be central control. In such cases it may be advisable to do part of the buying locally, but there should be a guiding and controlling hand, to which the local buying bears the relation of fingers.

The designation of "everything" is used in exactly the sense the word implies, and covers raw material, machine tools, equipment, and office supplies. This policy of centralizing the buying is put into effect through the purchasing department, and it should be the court of last resort. If manufacturers and suppliers are allowed to solicit business from the heads of other departments, coming to the purchasing department for a confirming order, it reduces its usefulness and standing. Salesmen should not be allowed to go

over the head of the purchasing agent. He is then a known quantity of power and any other policy would weaken his position in negotiating a deal.

The demands on the purchasing department grow naturally from the needs of the business, and cannot therefore originate with the department itself. For this reason it is essential that the work be efficiently and expeditiously carried through, for on this depends the measure of usefulness it is to the other departments and to the whole undertaking. There are many ways in which this can be demonstrated, and standardization will be given as an illustration.

Standardization of materials is generally recognized as imperative, and strenuous efforts are made throughout all production departments to put this policy into effect; but quite often in large undertakings supplies and equipment are of such a variety as to bewilder one accustomed to uniformity. Such things as stationery and office furniture seem peculiarly susceptible to the vagaries and personal predilections of the heads of departments. There will be, for instance, three makes of filing cabinets used when one would answer for all departments. Many cases could be cited in all kinds of supplies. It is particularly noticeable in some of our municipalities. The standardization could be effected through the purchasing department more readily than any other source, as it is the clearing house for all requisitions. Economical considerations and the question of convenience should compel attention to this. Certainly better prices can be obtained if standard articles are bought which can be used in any department, and the convenience derived from their being interchangeable cannot be overlooked.

Size of the Department

This department of a business may be large or small. It should be proportioned in size and importance to the actual requirements and necessities of the undertaking. In a large corporation devoted to transportation, public utilities, or manufacturing, this will mean a purchasing agent with a staff of assistants necessary to such an organization.

In a strictly merchandise business, there will be buyers for the numerous departments who act individually under certain restrictions and sometimes under central control.

Some of the large railroad combinations which operate lines in various sections of the country have a system of co-ordinating their purchases through a purchasing agent who has his office in close proximity to the president and directors, and possibly not anywhere near the railroad for which he is buying.

Manufacturing concerns with factories in widely separated parts of the country have found it to their advantage to have a central control for purchases. This is sometimes done through a supervisor of purchases, under him being a purchasing agent for each factory. Good results have been obtained through such a scheme in the matter of price, uniformity of raw material, and better regulation and control of purchases, consequently making things easier and smoother for the financial department.

The size of the department can be graduated to meet the needs of every establishment until in small concerns there may be only part of the services of one man required; nevertheless, it is strictly a de-

partment of the business, and the fundamental principles governing its work remain the same irrespective of its magnitude

The Employees of the Department

The staff necessary will of course be governed by the volume and importance of the work passing through the office. There must be sufficient number of employees to carry through promptly and efficiently the daily routine operations. A department has failed because through outside pressure it has been forced to reduce its staff to a point where the work could not be carried through in its normal course, or it has been compelled to employ inferior help with a corresponding reduction in efficiency. This is not economy, it is parsimony. If the work of the department is worth doing at all, it must be well done or it has no reason for existing.

A department may fail in its mission from other causes. It may become overloaded, top-heavy, and encumbered with too many employees, or an unworkable system of operation. Either of these conditions will mean a reduction in efficiency, and if its continuance as a useful factor in the business is desired, reorganization will be necessary.

Greatly increased efficiency can be obtained by effective team work, and among the members of the department there should be engendered a spirit of good feeling and co-operation, which should be encouraged to spread to all the points where contact is made with other divisions of the enterprise. This is of inestimable benefit in overcoming friction.

Relations with Other Departments

A staff which is entirely unsympathetic with the particular needs of the users of the material will fail to grasp what is one of the most essential things necessary for this department. They will be dealing with papers and accounts instead of with men and things.

It is up to the head of each department to bring about and keep in existence this harmonious relation, and tact, discretion, and diplomacy should be exercised by all the staff, for this department is constantly in contact with others. Every purchasing agent has had the experience of being told what is thought of his department when any delay has occurred in obtaining material. It is assumed at once that the purchasing department is entirely out of sympathy with the legitimate aims of other departments.

Every department of a business is a member of one family and although each member must stand on its own feet and work out its own salvation, it should nevertheless be willing and ready to assist and make as smooth as possible the workings of every other department. This can be done without much overlapping, which should be avoided wherever possible. The duties of each can be clearly defined and the work allocated so that no friction will exist, and happy is the concern which can carry on its multitudinous activities in such a manner, for it is no exaggeration to say that vast sums are lost where these conditions do not prevail. There should be a meeting point between any two departments where no clashing, friction, or jealousy exist, but where the necessary

intercourse and junction between the two flows as smoothly as the traditional village stream.

It is a question mainly of being able to meet and handle the peculiarities and prejudices of the human element. Any concern comprising many departments may have to meet this in an acute form, but with the right methods it can be met with the least amount of inconvenience and hindrance to the work of any department with an appreciable resultant gain.

The attitude of the other departments of the undertaking will be a reflection of the purchasing department's service to them, and the criterion by which it will be measured. Mutual confidence and co-operation will be attained by a policy of tact and willingness to help. The lines of demarcation between departments are not boundary lines between two countries, where many formalities have to be gone through before one can cross.

Subdividing the Department

Figure 5 illustrates in a distinctive manner the method of dividing the work of a purchasing department. There are really three main divisions of the work connected with purchasing, these being:

1. INFORMATION, which includes:
   - *a.* Obtaining information as to sources of supply.
   - *b.* Recording data of past purchases.
   - *c.* Recording prices and quotations.
   - *d.* Keeping results of inspections and tests.
   - *e.* Maximum and minimum quantities and future needs.

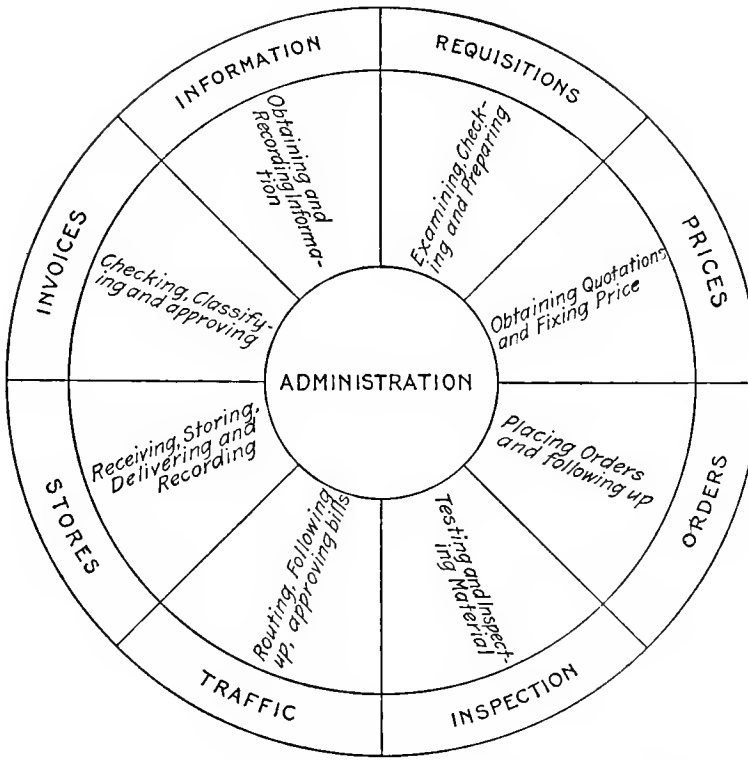


FIGURE No. 5.—Chart of the functional organization of a purchasing department.

2. PURCHASES, which is subdivided into:
   - *a.* Work connected with requisition.
   - *b.* Obtaining quotations.
   - *c.* Placing orders and following up.

3. INVOICES, which is subdivided into:
   - *a.* Recording and checking with order.
   - *b.* Checking prices, classifying, etc.
   - *c.* Approving and passing to accountants.

There is other work which is in some cases included in purchasing department, and in others is entirely separate. This work is connected with:

4. Traffic, which is subdivided into:
   - *a.* Seeing that shipments are properly classified;
   - *b.* That correct freight rates are obtained;
   - *c.* That no delays occur in transit.
   - *d.* Getting quick adjustment of claims.
5. Inspection, which includes:
   - *a.* Inspection of material before or on arrival.
   - *b.* Making physical and chemical tests.
   - *c.* Reports on material in shop and in the finished products.
6. Stores, which is subdivided into:
   - *a.* Receiving material and supplies.
   - *b.* Storing in secure and proper places.
   - *c.* Delivering for consumption as needed.
   - *d.* Keeping proper and reliable accounts.

The first three sections, which are connected with purchasing, are dealt with fully throughout the book; but the other divisions, which are not essentially a part of the function of buying, call for some remarks on the principal features of their activities.

Traffic Division

In industrial economics the study of problems connected with transportation and stores keeping are extremely interesting. The efficient operation and conduct of the work coming under these designations is vital to the well-being of any concern. They are closely related to the work of the purchasing department, but owing to the magnitude of the undertaking,

or some other good reason, the work connected with traffic and store keeping does not come under the purchasing agent's control, but these are organized as separate departments. This is a matter for solution as found best in each individual case. If the regulations governing the purchasing department require it to buy and furnish materials and supplies, then it is certainly part of its duties not only to buy, but to deliver the goods to the department needing them. This means arranging and controlling transportation, receiving, properly storing, and finally delivering them to departments for consumption when they are ready for them.

The main objects which are achieved by the proper and efficient control of the traffic problem are:

Goods are received promptly and correctly.

Shipments are made properly.

Teaming is arranged on most economic basis.

Freight charges are lowest obtainable.

Claims are quickly adjusted.

It is not the province of this book to go deeply into this interesting subject. The brief description given will convey some impression of its economical importance in all transactions involving the movement of merchandise, material, and equipment.

Inspecting, Receiving, and Storing

The proper inspection, receipt, and storing of materials and supplies are of great importance. The principal advantages secured by the efficient control of these functions are:

1. The receipt of goods as ordered, both in respect to quantity, quality, weight, and size.

2. The rejection of excess quantities or those incorrect in weight or size, or inferior in quality.

3. The absolute knowledge that, when invoice is checked with material receipt, you are getting exactly what you are paying for.

4. The proper care for material until such times as it is needed for consumption, with the minimum amount of deterioration.

5. The maintenance of a complete and perpetual inventory during the period that goods are at rest in the stores.

6. The delivery for use or consumption exactly as and when required, with a complete record of same. Cost accounting would be practically impossible without this.

The perpetual inventory serves to show when stocks are reaching, and have reached, the maximum and minimum permissible. The fixing of this limit in both directions is of the highest importance. It enables sufficient material to be carried in stock for the needs of the business, and is a preventive against overstocking. There is a monetary value in being able to furnish promptly to the production department such material as they need at the precise moment it is required. Active stocks can be maintained at the minimum consistent with safety. Investment is kept at the lowest possible point. The space occupied is reduced to the smallest dimensions. All these are gains, whereas if stocks carried are excessive for needs of business, or if track is not kept of the activity of certain stocks and they accumulate beyond requirements, or if "dead" stock is carried, the following losses are incurred: depreciation, insur-

ance, obsolescence of money invested, value of space occupied.

The perpetual stock record is theoretically a correct basis for periodical inventories, but the human factor must be taken into account, and some discrepancies are always shown when actual count is made. The nature of the stock has something to do with this. It is remarkable, however, how closely these check up in well-kept stores. In theory it should balance as accurately as the cashbook. When checking the perpetual inventory with stock in stores it is not necessary to make a count of all items at one time, but it can be done in sections while routine work is going on until the whole is covered with frequency and regularity.

CHAPTER VI

Organization of Department

Organization of Personnel

THE purpose of this chapter is to endeavor to outline the organization of the staff of the department. It is not possible to present to the reader an office completely organized to fit any condition, all the employees at their respective desks with the necessary equipment as a potent working force.

Some purchasing departments have been in existence so long that their evolution and growth are shrouded in obscurity. The origin, however, in all cases has been the same: the necessity for a systematic method of making and controlling purchases. From this need the idea sprang and was followed by the apportioning of part or the whole of one man's time or the allocation of several men to the work.

This was the nucleus from which all purchasing departments started, and a similar scheme must be followed by any concern desiring to bring its policies into recognized lines of highest efficiency.

The purchasing department is an economic development itself, and therefore its internal management should exemplify this policy. This does not mean that cheap men should be selected for the work, as such a policy would be like buying the lowest priced article which might prove the most expensive from a utilitarian point of view.

The main object to be achieved is to get the work done ably, correctly, and expeditiously at the least cost. Cheap men and mistakes are more expensive than high-priced men and efficiency.

The organization should be complete, but at the same time should consist of the smallest possible number of employees. Work can always be carried out more effectively when there is sufficient to keep each person diligently engaged rather than when there is a superfluity of employees without proper duties to assign to each.

In any active business the purchasing department fulfills one of the most vital functions of the concern, and its activities cannot be stopped or delayed. In considering, therefore, the number of employees necessary for the department, this must be borne in mind and provision made for the work to continue during the temporary absence of any employee.

To provide for this contingency means that each person in the department must have an understudy, or the work allotted to him must be of such a nature that it can be portioned out among the others for short periods. There should be no indispensable man in the organization.

This policy has a beneficial effect in making the force more adaptable, and has a tendency to make a man take more interest and do his work more intelligently, because it gives him a broader view of the work as a whole. He sees more clearly where his particular duties fit in, and he may be enabled to see improvements which can be effected.

This also brings more intelligent co-operation between the employees which has a direct influence in

securing more completely the objects to be attained, and is of inestimable benefit to the conduct of the work. It is also conducive to more enthusiasm, and enthusiasm breeds loyalty and contentment, which beget efficiency.

One cannot take the plan of the organization of any going concern and implant it in another establishment as a solution of the latter's problem, and as embracing all the elements necessary for the performance of its work. Circumstances and conditions vary to such a degree that this is not possible even where the nature and volume of the business are practically identical.

It is therefore intended that the organization as outlined here should be looked upon more for helpful suggestions. It is one of the constructive duties of the purchasing agent to plan the details of his department and anything he finds useful in this supposititious organization will have to be adapted to his own surroundings.

Theorizing does not accomplish anything, but it is generally the product of experience, and put into practice produces experience.

In studying employees, the men selected for the various phases of the work should be chosen with a view to their natural aptitude for the work to which they are assigned.

Linking up the Employees

Where the organization is large enough to warrant its being subdivided for the better performance of its duties, great care must be taken to form these subdivisions in such a manner that intercommunica-

tion is easy and made without perceptible retardation of the work.

Another matter to be considered is the linking up of the individual work of each member of the organization to form a composite whole. An endeavor has been made in Figure 6 to demonstrate this. It is only intended here to briefly outline the duties of the members of this tentative organization for the better understanding of the chart. Their complete activities will be described when each function is dealt with in detail.

Information Clerk

A large proportion of the work of the department can be done only by frequent reference to the information and data on file. It will be necessary for the person in charge of this to keep his records up to date. He must have all requisite facilities for obtaining and retaining the data as to prices, sources of supply, past purchases, catalogues, inspection reports, etc. He must, therefore, be methodical and systematic, and be ready to furnish the information promptly and correctly or have it in such shape that it can be easily referred to.

Requisition Clerk

Requisitions frequently come into the office with incomplete information on them, and it is the duty of the man handling them to see that they are in proper order and that the material is correctly specified. He will have to refer to the information files constantly and must be in close touch with the man having charge of these.

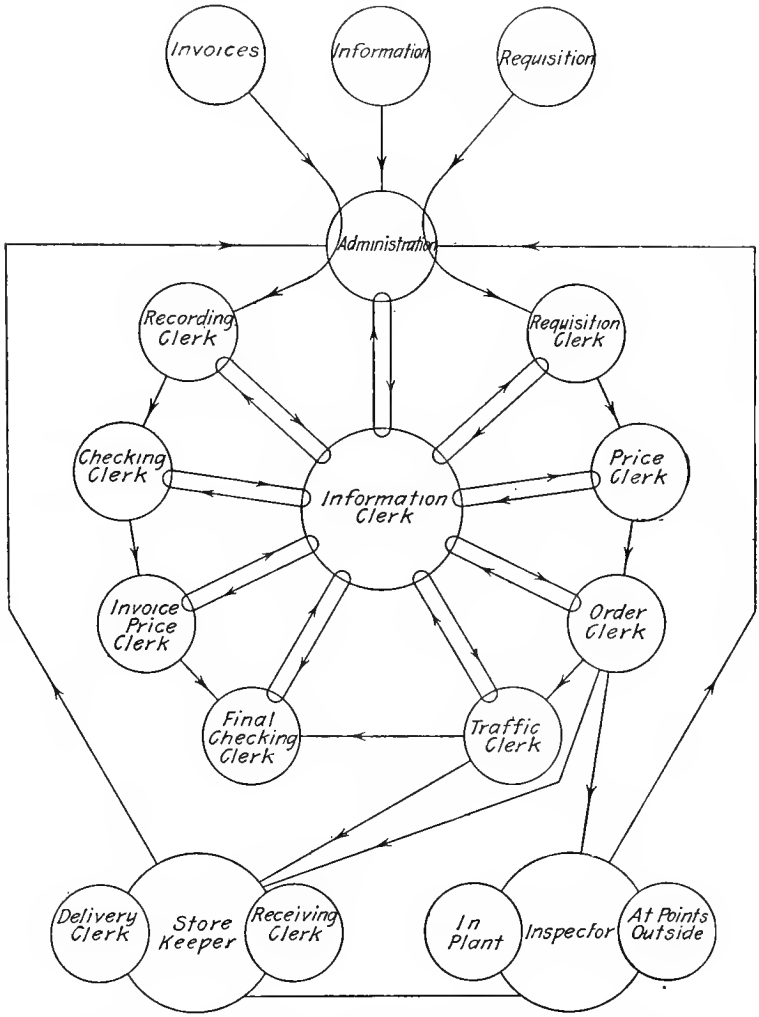


FIGURE No. 6.—Organization of the personnel of a purchasing department.

Price Clerk

The price clerk will specify the price from agreements or contracts which are already in force, or obtain

quotations, make comparisons of the prices, and submit them to purchasing agent.

Order Clerk

The duties of the man in charge of orders will be to see that they are properly written up from specifications and with correct prices, check them before the purchasing agent signs them, and follow up after they are placed. Copies will have to be sent to parties interested.

Inspector

The inspector will receive copy of order and inspect material either in the plant or at point of shipment, reporting to purchasing agent and possibly to storekeeper. He may also have to furnish reports on the action of materials during the process of fabrication.

Invoice Clerks

There will be as many men as necessary on this work, recording invoices, checking with order, checking prices, classifying, having traffic man approve freight charges, and finally passing invoices to accountants. Part of this work is sometimes done in accountant's office.

Traffic Clerk

There are many industries whose activities are not of sufficient magnitude to warrant the maintenance of a separate traffic department. Again, some concerns whose operations are very large can, from the nature of their work, combine this work with the purchasing organization. This is the case where the

orders placed are mainly for construction work and traffic matters all pertain to these purchases, there being no shipments from factory for sales department. A man should be selected for this work who is conversant with its character and the problems involved in it.

Storekeeper

A reference to Figure 6 will show in what manner the storekeeper is linked up with the various activities of purchasing. He is more directly interested in the actual movement of the material itself and its conservation. The purchasing agent has indirect connection with the storekeeper through the order clerk, but the storekeeper on his part must have direct access to the purchasing agent, and an effort has been made in the diagram to show how this is accomplished.

When the activities of the purchasing department are restricted to buying, the stores organization would be formed independently, but it is sometimes found advisable to combine the keeping of the stores with the purchasing, especially in the smaller manufacturing concerns. A short summary of the organization to take care of this work is given here. As in the traffic division, the volume of the work to be accomplished will determine the number of employees requisite. This will vary greatly with different concerns, but arrangements must be made to cover the following points irrespective of the number of employees organized to do it:

Receipt of all material and supplies.

Checking to see that they correspond with orders.

Counting, weighing, and measuring.

Placing in proper storage compartments without

undue delay, or in some cases delivering directly to department for consumption.

Entering on receiving records.

Making entry on stores record or perpetual inventory.

Delivering from stores to various departments all material and supplies required by them.

Making entry on perpetual inventory.

Keeping stores tickler in force and advising purchasing agent.

Keeping record for cost accounting.

Receiving scrap into stores, counting, weighing, and measuring, and advising purchasing agent.

These are the principal points to be covered and a good man should be placed in charge with the necessary clerical help for keeping up the records. In handling the material, arrangements must be made to give all the help required. The men engaged in the physical operation will be under orders of the storekeeper. In small factories it is not always possible for these men to be a fixed number and temporary assistance can be drawn from other departments to assist with heavy material.

When the cashier receives a dollar he is held accountable for it, and has to keep a proper record of its disposition. A dollar's worth of brass tubing is just as much an asset as a dollar in cash. The honesty, integrity, and reliability of the storekeeper must be on a par with the cashier. In fact, the storekeeper must be more watchful and careful in guarding against petty thefts. The assets under his control cannot be placed under lock and key and sometimes many persons are handling them in receiving into and delivering from the stores.

A further reference to Figure 6 will illustrate that the organization of the personnel is dependent upon three main sources for the arrangement given of their work. These sources are shown at the head of the chart. The functions of each member of the department originate from one of these and the performance of the work of each follows a well defined course. There are however many minor activities which are common to almost any business office but which are too well known to need detailing here.

CHAPTER VII

System of Procedure

General Outline

WHATEVER the size or scope of the department, it is absolutely essential that there should be a proper system on the lines of which the work can be carried along, but system does not perform an operating movement. It is simply the well-kept track on which the energy and efficiency of the organization put through the work to be accomplished until the terminus is reached. This track must be kept as straight and level as the nature of the route to be traversed will permit, with the least possible number of curves and grades, and where these cannot be dispensed with, they should be gradual and easy.

In pamphlets and books on various systems for office, store, and factory management, statements are frequently made regarding what a good system will do. As a matter of fact, a system of itself will do nothing. It may be inert and useless unless operated. A good system can be compared to a trunk-line railroad with useful and profitable branches. Care must be taken that no unprofitable extensions and branches are added, or they will be a burden and expense and retard and clog the work of the main line with the prospect of rendering the whole a failure.

Forms and office implements do not make a system, they are the vehicles or implements necessary for

operation and will be described in subsequent chapters. They should be as few as possible, for then the work will be expedited. Too many forms are cumbersome and retard the work.

The aim should be to plan or outline a route for the work of the office, which shall have a definite object in view and be coherent, logical, and thorough. It should expend the least amount of the energy of the organization. Simplicity should be kept in view, and all forms used should be devoid of any features likely to lead to complications. Have the system cover everything essential to gather into concise form the necessary data, and in such a way that they are readily understood and easily accessible. When this object is attained stop, but do not stop until it is attained.

If a condition of over-systematizing is allowed to come into existence, it is a menace and will lead to confusion. An abnormal desire by the head of a department to secure and maintain records covering a mass of detail not pertinent or essential to the department, will eventually crush it by its own weight; while an incomplete system will render the work and operation of the department laborious and inefficient. A good system will help towards order, regularity, and expedition.

The justification of a system is its effectiveness in covering with accuracy and dispatch all the points comprehended in the work of the office with the absolute certainty of increased economy.

It is necessary to design and lay out one's own system. Although valuable suggestions are obtained by studying others, they can rarely be adopted with-

out alterations and changes to meet the conditions of one's own case. A good system is really dictated by common-sense. It has to be administered by the organized staff in the office with all the human frailties, and the better co-ordination it can bring to their efforts, the greater its potentialities for success.

There are thousands of men today at the head of large establishments who look on system as so much red tape, and the observance of any logical routine in handling their business is repugnant to them. Certainly they have their methods of doing work, but they are imbued with the idea that there is some inherent complexity in a correct system. The writer knew of a manufacturer, whose annual business amounted to several hundred thousand dollars, with the following routine for making purchases: A foreman would need some material and would make a memorandum of it on any piece of paper which came first to his hand. This "scrap of paper" was sent to the office where the bookkeeper would write an order. Price was never questioned, quantities in stock were unknown, and invoices checked from memory. If material was urgently needed, the bookkeeper would telephone for it, not sending a confirming order. If he happened to be out of the office, the foreman himself telephoned.

Some men do business with methods such as these and make money, but it is only when their profits are abnormally large, and when brought into the strong light of competition with businesses which have an efficient purchasing system and accurate methods of cost keeping, they would be pushed to one side and probably not know the reason why.

A system is a means by which the purchasing agent can put the work through the office by the shortest route, giving the most efficient service at least cost.

System of Procedure for the Collection of Data and Information

The collection of information pertinent to the activities of the department is an absolute necessity if it is to be kept thoroughly posted. And, unless the members of the department want to trust to their memories, it is equally imperative that all of this information should be assorted, converted, reduced, or arranged so that it can be placed in convenient and handy receptacles ready for instant reference by the purchasing agent or his assistants. This is the stored knowledge of the department and is a potential factor in its operation.

Figure 7 shows the route to be followed in reaching out and acquiring the various items of information, printed matter, etc., which are necessary to make the files valuable for reference. A full description of this work will be found in the chapter on Operation of the Department. On receipt of the information in the office, or in posting it from quotations and orders, an orderly and logical arrangement should be followed by simple processes, so that there may be concentrated in clear and concise form a complete expression of the data required.

Except the data and information posted directly from office records, all the other matter relating to this phase of the work can pass through a regular clearing-house system and be sorted and placed in its

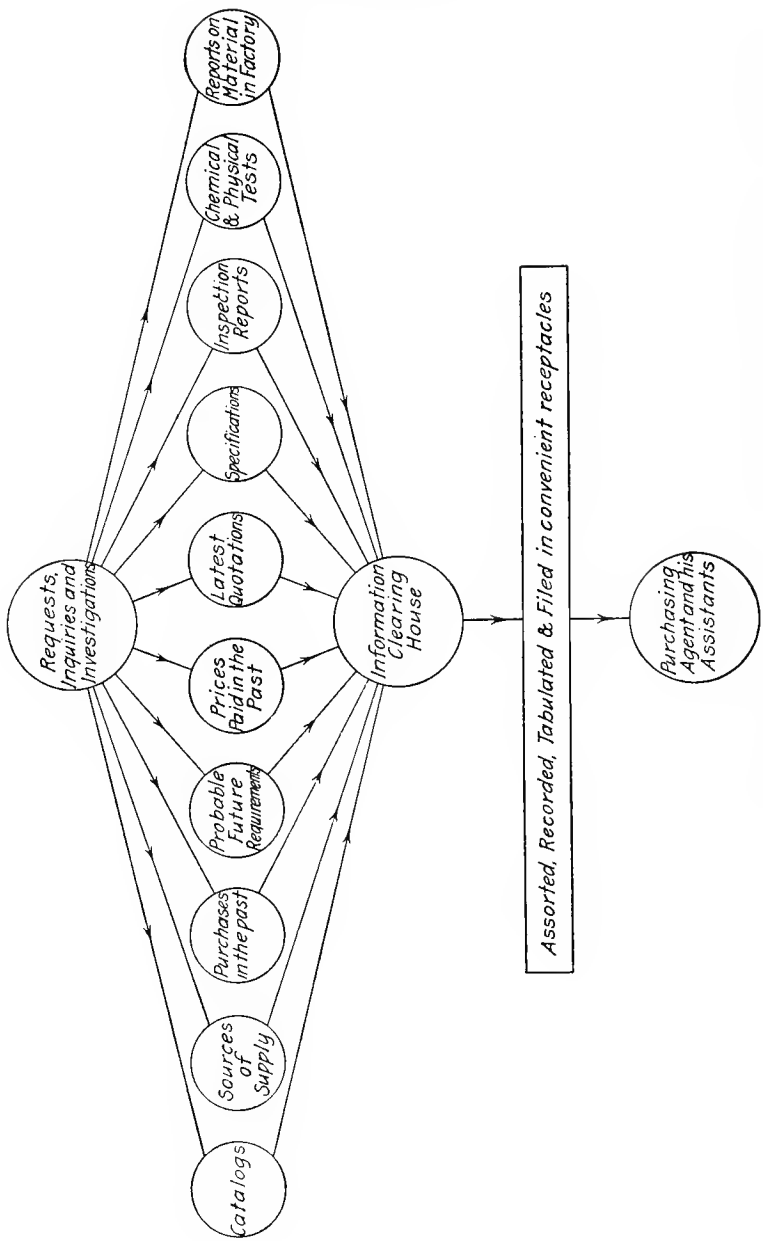


FIGURE No. 7.—Chart of system to be followed in obtaining and recording information requisite in a purchasing office.

proper receptacles ready for reference at any moment by the office staff or purchasing agent.

Purchasing Procedure

The system followed in making purchases is very clearly illustrated in Figure 8. The requisitions coming into the office constitute the authority to make the purchases. They should be seen first by the head of

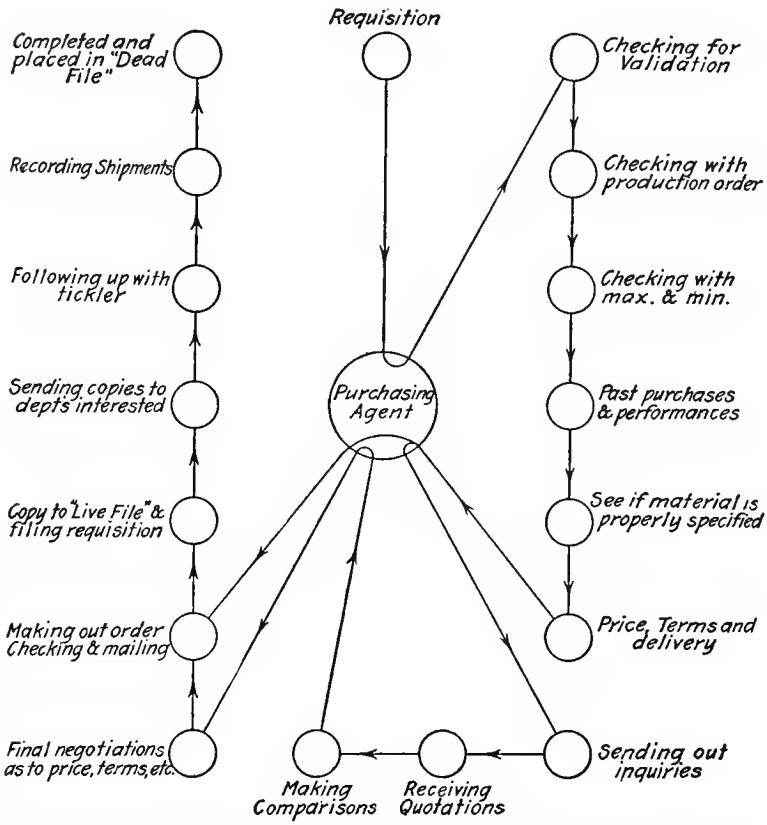


FIGURE No. 8.—Chart of procedure from time requisition is received until order is completed.

the department if possible — some establishments are so extensive that this cannot be done and they are passed along to an assistant. The department will have a list of the men authorized to sign requisitions and they must be examined to see that they are signed by a properly authorized person and that the classification of material is stated. In a manufacturing establishment it may be necessary to check it with production order, also with maximum and minimum

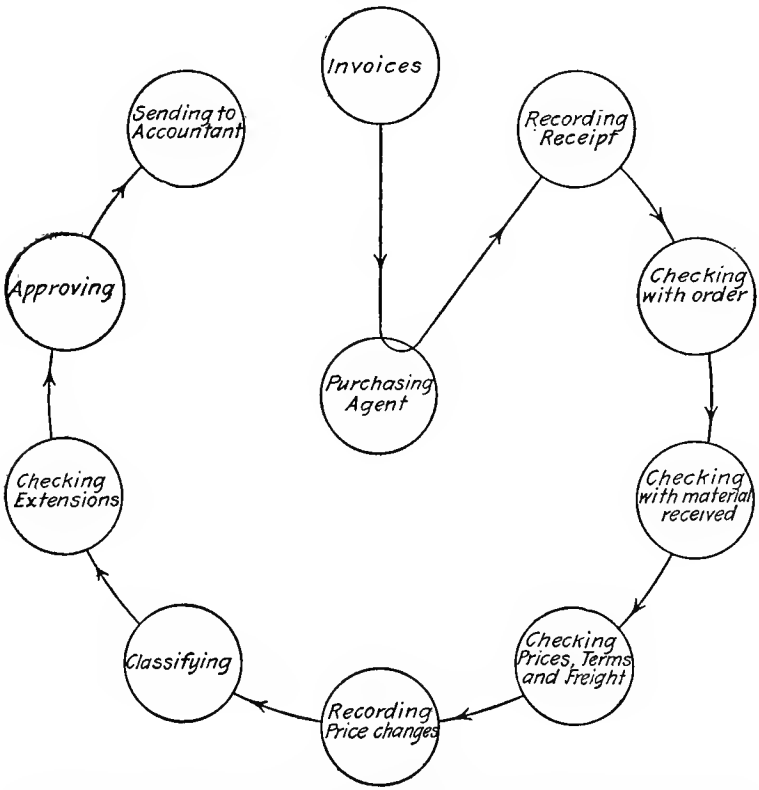


FIGURE No. 9.—Invoices must go through a fixed course and over a route which will insure their being systematically checked and approved as indicated in this chart.

and past purchases. The proper specification of material will have to be obtained from records and attached to requisition. The price will then be investigated, and if it is an established one, the order can probably be placed at once; if not, quotations will have to be obtained and compared, submitted to purchasing agent for final negotiating, and will then follow the same course as those orders for which no quotations were obtained. The chart clearly indicates the final course the orders take.

Invoice Procedure

All invoices coming into the purchasing department follow a course similar to that outlined in Figure 9. The various steps are shown with sufficient clearness to enable the procedure to be closely followed. In some establishments some of these steps may be cut out; such as, checking with material received, and checking extensions, which may be done in the accounting department. All the features connected with the approval of the invoices have to be accomplished in one department or the other before they are vouched for payment.

Stores Procedure

Figure 10 shows the system followed by the storekeeper. On the left the course of procedure is indicated in receiving and checking, storing and recording material. On the right are the deliveries of material to, also material received back from, shop. All three of these finally get on to the perpetual inventory and from there follow an identical route. Scrap received into stores is shown on a course of its own, so also is

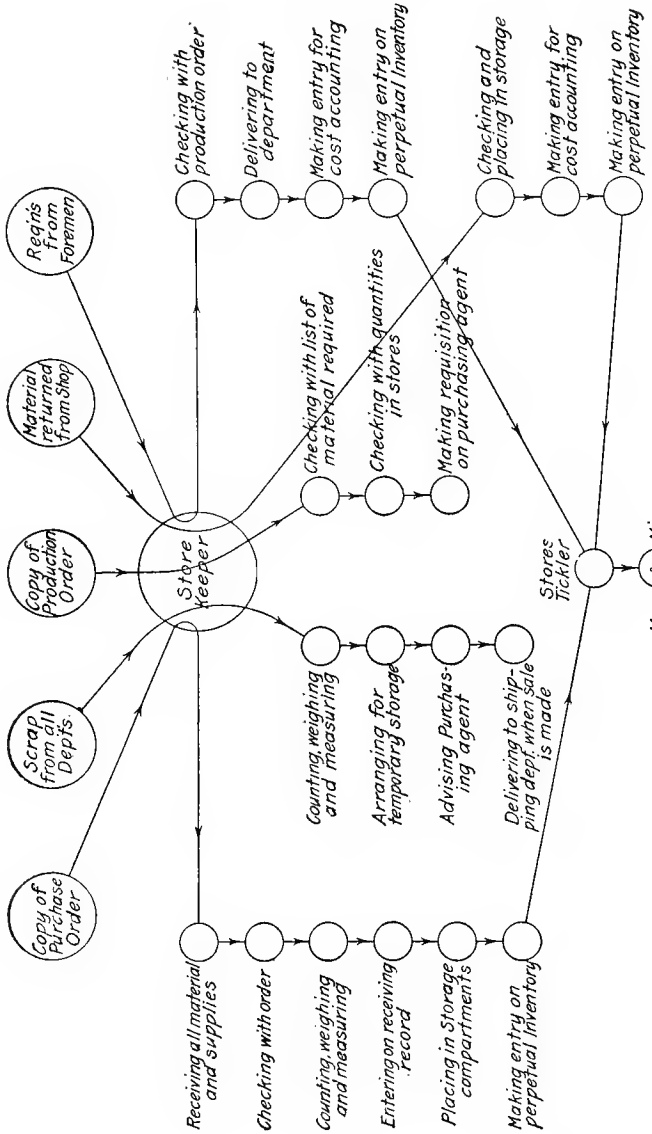


FIGURE No. 10.—Chart of stores procedure.

the work connected with production orders, if this is handled by the storekeeper.

Inspection Procedure

Inspection is not properly part of the internal work of the purchasing department, and is not therefore shown on above charts. Nevertheless it cannot be ignored in arranging the methods of procedure. Copies of certain orders with instructions must be sent to the inspector and reports will be received from him. Invoices may have to be held until these come in. The relation which inspection bears to the other functions of the organization is shown in Figure 5 in the preceding chapter.

Traffic Procedure

If the work connected with transportation matters is handled in the purchasing department, a system of doing it must be devised on the following lines. Information and data must be recorded and kept handy for reference in a manner similar to that outlined for purchasing records. The system of records must comprise the following:

Freight classification of goods.

Rates from his own and competitors' shipping points.

Switching and terminal charges.

Record of business done with each railroad company.

The following is the routine work which will have to be systematized:

Defining the manner in which goods shall be packed.

Routing of all freight.

Making arrangements with transportation companies for shipments.

Arranging for all teaming.

Tracing shipments when delayed.

Getting proper receipts for shipments.

Checking and approving all freight and teaming charges.

Handling all claims against transportation companies.

A reference to Figure 5 shown in preceding chapter will indicate where the traffic function comes in contact with the other work of the organization.

CHAPTER VIII

Obtaining and Tabulating Proper Records

The Collection and Recording of Data and Information

THE following chapters will describe the actual operation of a purchasing department. In doing this a description or illustration of the forms to be used and any other equipment which may be required for doing the work will be given. The compiling, assembling, and keeping the data and records, while perhaps not the most important section of the work of the office, have been mentioned first in previous chapters and will be so dealt with here. It is essential that it be kept in compact and concise form and intelligently arranged for easy reference. It is not radically different from corresponding work in any other office, but there are some special features connected with it which need close observation.

One thing which should never be lost sight of is that there is no finality to this work. When a requisition comes into the department and is disposed of in the regular way, the order placed, material received, and invoice approved, that requisition and order are "dead." It is quite different with the recording of information, as this must be kept active and alive. It is true that some recorded data will become obsolete, such as prices for instance, but these should be superseded by prices which are current and represent

the market of today. A price or quotation may be five years old and yet if it represents the latest market figure it is alive and in force.

The accumulation of reliable records is probably more essential for the purchasing office than for any other department of a business. It is the memory portion of the brain of the department. A substantial proportion of these records can be compiled from the actual transactions which take place in the department itself, but there are other facts which are necessary accessories and which can be obtained from the other departments and from outside sources. A reference to Figure 7 in last chapter will make this better understood.

Some offices will require much more information than others — it will depend on the nature of the business. The staff should, then, be organized to take care of this condition. The methods of doing this work will be outlined, but it must be remembered that in very small establishments it will only take part of the time of one person, while in very large ones several people may be engaged on the work.

The purchasing agent should energize the movement and appoint some member of his staff to take charge of it. His personal activity will be necessary in occasionally visiting the sources from which he is getting his largest and most important supplies and other plants manufacturing goods of a similar nature. By observation and inquiries he will learn a great deal which will be very useful. Notes of all these points should be made and properly recorded on his return to the office. These visits of the purchasing agent will enable him to get some impressions and will give

him a mental picture which will be exceedingly valuable and which could never be acquired from any data obtained through other channels.

Catalogues

It is a practice with some purchasing agents to decry the utility of catalogues. Certainly some of them do not tell one much, and if they are accompanied by a price list and discount sheet they are used merely to get a comparative price. For any purchase of importance an endeavor should be made to secure better figures. Nevertheless, it must be admitted that there comes a time when catalogues are perused and assiduously searched for some particular thing or information. This is the experience of both large and small buyers. It is expedient therefore to obtain a good library of catalogues which bear any relation to the character of the purchases.

If one goes into any public library some good ideas can be obtained about storing and keeping books for ready reference, also the amount of space required, the necessary clearances, average size of books, depth of shelves, etc. If it is proposed to establish an extensive catalogue library, it would be advantageous to have special bookcases, shelves, and receptacles made. They will prove to be cheaper than extension bookcases and can be arranged to suit the space available. There are several methods of filing the catalogues and the best is undoubtedly to arrange them according to size. It will be found that they can be segregated into about six dimensional divisions and the shelves can be spaced to suit. There will be a great many more catalogues of the medium sizes than

of the largest or smallest, therefore more shelf space must be allotted to these.

This scheme will work out somewhat as shown in Figure 11. All catalogues must be numbered on a label pasted on the back, or if the book is not sufficiently large then paste it on the front in the left-hand top

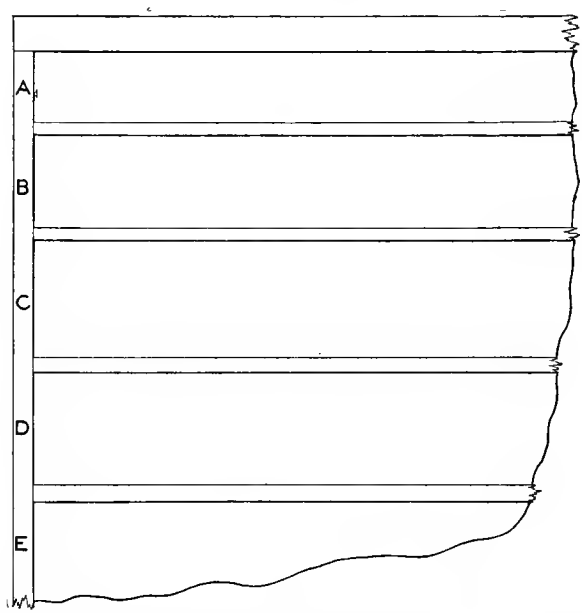


FIGURE No. 11.—Sketch of arrangement of shelves for catalogues.

corner. Commence numbering the top row one and upwards. If it is a small case, the second row will commence at 200, the third row at 300, and so on. Larger catalogue cases can have the second row commence at 500, the third at 1000, etc. But perhaps a better way, if the collection is very large, is to commence the top row $\frac{A}{1}$, second row $\frac{B}{1}$, third row $\frac{C}{1}$, etc. All these methods are distinctive in that they desig-

nate which shelf the catalogue is on and it can be located instantly. If the shelves are exceptionally long, they can be subdivided by distinctive numbering for each section. This can easily be figured out as the catalogues accumulate.

The shelves as described take care of all stiff, bound catalogues, but there will be also a great many pamphlets, circulars, etc., which it will be necessary to keep and file. These can be placed in folders similar to correspondence folders, keeping as far as possible all printed matter on one subject in the same or adjacent folders.

MATERIAL

NAME OF MANUFACTURER	ADDRESS	SHELF	CAT. NO.

FIGURE No. 12.—Card for indexing catalogues under name of material. Size 4x6 inches. Color should contrast with card shown in figure No. 13.

All catalogues will then have to be cross indexed, filing one card, as shown in Figure 12, under the material or subject index and the other, Figure 13, under the index "manufacturers" or "suppliers." These two cards should be different colors, as this is a precaution against their being placed in the wrong filing drawer.

It is sometimes found convenient to keep the drawers containing these index cards on the desk or within reach of the person using them most frequently. If,

Name of Man'f'r.	Shelf	No.
Address	A	48

List of Material Manufactured

.....
.....
.....
.....
.....
.....

Figure No. 13.—Card for indexing catalogues under name of manufacturer. Size 4 x 6 inches.

however, the bookcase has been built specially, it is possible for it to be so designed as to include these drawers, also the drawers for folders as an integral part of it, making all the catalogues, pamphlets, circulars, and their indexes self-contained in one piece of furniture. See sketch, Figure 14, which illustrates approximately the manner in which this can be done.

Sources of Supply

The record of sources from which materials, goods, and supplies can be obtained should be revised constantly and kept up to date. It is not sufficient to keep a list of manufacturers from whom purchases are regularly made. They may be the ones who have been best able to supply requirements in the past and

are in the best position to do so at present, but changes are continually taking place and new manufacturers coming into the market better equipped perhaps than the old ones. If the market seems too narrow or it is felt it is not broad enough for purchases to be made to the best advantage, then persistent

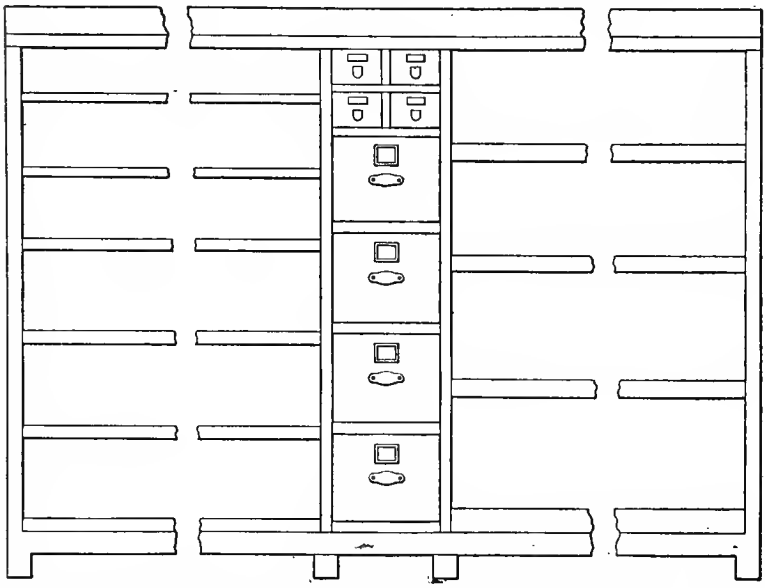


FIGURE No. 14.—Sketch of book case for catalogues showing arrangement for filing pamphlets and circulars, with index drawers.

endeavors should be made to obtain information to rectify this. Tabulate any data acquired, make notes from correspondence before it is filed as to character of goods made by concern the letter was from, also notes of anything salesmen say they are prepared to quote on or supply. A great deal of valuable information will soon be accumulated which can be collected on cards, if the market is assiduously searched.

There is a limit to this as a point is finally reached where the supplier is located at such a distance from where the material is to be consumed that questions of freight and time might prohibit their being considered. To make all the purchasing records of greatest value, they must represent good live buying prospects, and not be encumbered with useless and unnecessary information.

Some offices rely on the catalogue index cards for recording these data, but it is not advisable. Keep those cards for the one purpose only. The form of card needed, or the one best suited for the purpose, will depend on the nature of the business. A suggestion for a card is offered, see Figure 15. A code rating of one's own can be adopted which will signify the financial standing of the supplier, whether he makes shipments promptly, whether there has been any trouble with his goods; in fact, all information that will be useful and which can be put on the card in an abbreviated form.

This record of sources of supply is intended to furnish information not given in catalogues. It will keep the purchasing agent posted as to where he can buy cheapest and best and get treated right. A salesman keeps himself posted as to good live prospects, why not the buyer? Inquiries will then reach only those who are keen for the business, and the quotations received will represent the best prices obtainable from the most reliable sources. Undesirable bidders will be eliminated when inquiries are sent out, and a remarkably high percentage of efficiency maintained.

MATERIAL _____ DESCRIPTION _____

SPECIFICATION NO. _____

Name of M'f'r	Address	Plant			Previous Service and Reputation					Cat. No.	Remarks
		Location	Distance	Capacity	Keeping Promises	Shipping Promptly	Quality	Business Methods	Financial Standing		

FIGURE No. 15.—Record of sources of supply showing where purchases can be made to best advantage. A card 8 x 10 inches can be used or loose leaf ledger sheets as found most convenient.

Record of Past Purchases

A combination may be effected by some concerns in recording some of the other information. Where a record is kept of purchase orders, it is sometimes done in such a way as to analyze the heaviest purchases, by which the totals for the year can be found with the prices paid; but it is not entirely satisfactory, for it frequently means a complication of figures which do not convey clearly and concisely the desired information. There are many manufacturing establishments which do not have the faintest conception of the quantities of each article or material which they buy in a year, or any given period, but just order in a haphazard way for immediate requirements or when stock is low. Very little work is entailed in keeping a record of such purchases, and when the consumption for a given period is a known quantity, buying can be done more intelligently and to better advantage. It is patent to any one that if a purchasing agent has definite and positive information, such as indicated, he can face the market with assurance and not be buying quantities on guesswork. Such data also would be exceedingly valuable to the persons in charge of the various departments where the goods were used.

A record should be kept of everything with prices paid. Simple forms for this purpose are shown in Figures 16 and 17. These can be elaborated on as much as necessary, so long as useful information is being recorded, but duplication should be avoided. In small establishments the stores perpetual inventory may be used for this purpose if it is kept in the purchasing office, but if not, one cannot send to the storekeeper

MATERIAL

DATE	ORDER NO.	PURCHASED FROM	QUANTITY	PRICE	PER	F.O.B.	VALUE	
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....

FIGURE No. 16.—Record of material purchased. The object being to enable the purchasing agent to obtain from this record the total quantity or value of any article or material purchased in a given period. Size 5 x 7 inches.

MATERIAL

Date	Order No.	Purchased from	List	Discount	Net	Freight	Delivered	Unit Cost	Total Value Purchased	

FIGURE No. 17.—Record of material purchased, an alternate to figure No. 16. This form gives unit cost. Both No. 16 and No. 17 also serve to show fluctuations in prices paid. Size 8 inches wide, length to suit. Loose leaf sheets can be used if desired.

to obtain this information every time it is needed. The main object to be served is to have a correct account of the total quantity, also the total value purchased of each article during three, six, or twelve months, with the prices paid. This will give an excellent basis on which to estimate the requirements for a similar period ahead, and one can go into the market intelligently, obtain better prices, and arrange deliveries exactly in accordance with the known wants. The sizes mentioned as suitable for forms shown in Figures 16 and 17 can, of course, be changed to include any additional information which individual conditions demand.

The Purchase Record

A complete record of all purchases is a positive necessity in some establishments for financial reasons. The purchasing agent may be called upon at any time to say what the exact amount of the purchases is for a given period, and how much will become due for payment in the following month or within a specified time. In other places this necessity may not exist, but nevertheless a record should be kept. It is not wise for the buyer to go along placing orders, not knowing the aggregate value of the material and supplies purchased. He may not be exceeding the maximum allowable, and he may be buying strictly for the requirements of the business, but if the purchases are for delivery one, two, three, or even four months ahead, he should know the value of the transactions he has closed and the man in charge of the finances should know the exact amount of the obligations he has to take care of.

Date	Order No.	Purchased from	Material	Quantity	Price	Value and Month of Payment					
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Figure No. 18.—Purchase record with an arrangement for analyzing the value of purchases over three months. By extending the width of sheet additional columns can be added for as many months as desired.

Figure 18 shows a method of recording orders with a scheme for analyzing the dates of payment over the three subsequent months. The totals for each of these months can be kept in pencil figures each day and a summary of the three at end of the month will be the grand total of the purchases for that month. This information, also the information on past purchase record, would be posted from the copies of purchase orders in much the same way as invoices are posted into a ledger.

There have been forms designed which combine the four following records on one sheet:

Purchase order record.

Invoice record.

Stores record.

Material price record.

It is possible there is a business the nature of which would permit this to be done, but it has never come under the notice of the writer. The idea is to enter the amount of order in first column, in the second column a record of invoice, the third and fourth columns being for stores record. But such a scheme makes it imperative that there shall be only one invoice for each order issued, one entry into stores, and the whole material delivered from stores at one time, because there is only one line used for each order. It is an impossible condition in any ordinary business, but is given here as a suggestion, as some might be able to adopt it. Generally, however, it can be demonstrated that separate records are very much better from every point of view. If too many records and figures are kept on one sheet they have a tendency to become so involved as not to be readily decipher-

Date	Order No.	Purchased from	Material	Quantity	Value		Remarks
.....	.....	.....	.....	.....	.....	....	.....
.....	.....	.....	.....	.....	.....	....	.....
.....	.....	.....	.....	.....	.....	....	.....

Figure No. 19.—Purchase record form which can be used as a substitute for Figure No. 18. Both of these are intended for use as loose leaf sheets and should have a margin for binding. Size 8½ inches wide.

able. Practically little additional work is necessary in keeping separate records.

Record of Quotations

The record of quotations, Figure 20, will be compiled from various sources. Salesmen who call are always ready to quote prices for something they are interested in, but which at the time may have no immediate interest for the purchasing agent. A note should be made to go on the quotation card, also any prices quoted in correspondence. Even if it is something not bought before, keep a record; it is a good thing to know prices of any article. While it is not to be inferred that records should be kept of goods which are absolutely and entirely foreign to the business one is engaged in, nevertheless the widest possible knowledge of prices is valuable to a purchasing agent. Common-sense should determine how far to go in this direction. When the comparison of quotations card is made up from inquiries sent out, turn it over to the record clerk and let him post the prices on this form; they will be valuable for future reference. It is not necessary to duplicate the record of prices already posted on the card of past purchases; that card is a record of goods actually bought. The quotation card should contain quotations from other firms for similar material, together with all other prices which can be collected from time to time.

Specifications

Standard specifications should be drawn up for all material used in production work, and for supplies of every kind and nature used around a plant there

MATERIAL _____ DESCRIPTION _____

Manufacturer's Name	Quantity	Unit	List	Discount	Net Price	Terms	Freight	Net Cost Delivered	Quotation made by	Date	File No.	Remarks

FIGURE No. 20.—Record of quotations. This is distinct from the record of prices of goods already purchased. Size of card 8 x 10 inches.

should be a proper description, clear, concise, and worded in such a manner as to leave no misconception in the mind of bidders or suppliers as to the article mentioned. When this information is obtained and understandingly collected for easy reference, it serves many good purposes. It will enable the purchasing agent to secure prices without any doubts arising among the bidders as to what is actually wanted, and will prevent references being made back to him for more definite information. The purchasing agent will positively know when he receives bids that they have all figured on the same grade of material, and his comparison of quotations will mean real competitive prices.

This procedure will also enable the various supplies used in a plant to be standardized. One department may requisition a certain size and kind of broom, another department may requisition the same kind but a different size. It may be found that one size of one description will answer for the whole establishment. All office furniture and stationery should be standardized. The furniture is then interchangeable and can be bought to better advantage. One can go into many large offices and find two or three makes of filing cabinets, whereas one manufacturer would have been glad to supply all that was required, and at a lower price than was paid for the separate purchases.

The specifications of material used in production can be drawn by the engineers, based on scientific knowledge of what is required, and on the action of the material in the course of its manipulation through the shop and in the finished product. These specifications may be short or lengthy. They should be type-

written or printed according to the frequency with which the orders are issued and the quantity used, and kept ready to send out with inquiries or orders. The original copy with copies of all changes, modifications, or amendments should be kept in folders and indexed. The description of supplies can in many cases be condensed, and entered on the heading of the card recording past purchases.

Inspection Reports; Analyses and Tests

All reports made by the inspectors on material during progress of fabrication and before shipment to the buyer, belong to the division of the office having charge of the routine work in following up the orders; but these reports should pass through the hands of the record clerk so that he can note on his records any items in them which would make his information more complete. Some establishments keep an inspector for examining all material on arrival at factory and his reports should be sifted in like manner. A large amount of valuable and instructive data can be gathered from these to be posted on the sources of supply record, Figure 15. A form of inspection report is shown in Chapter X, Figure 36.

In construction work inspection and tests are made of all important purchases of material before shipment and where this is not done samples are taken after delivery, of such things as cement, steel castings, etc. for the purpose of analyzing and testing. Copies of these analyses should go to the purchasing agent's office and be put on record.

In a manufacturing plant, if a laboratory is maintained for making chemical analyses and machines

for physical tests are available, it puts a powerful weapon in the hands of the purchasing agent. He can have recourse to these and determine positively that he is being supplied with what he bought. These analyses and tests are also exceedingly helpful to the engineering department and the ability to determine the composition and strength of materials is of great utility and economic value to the production department. Many manufacturers depend on the suppliers to make tests and suggest to them the most suitable composition of their raw material, thus placing themselves under obligations to them. With one's own laboratory the experiments can be carried on in the plant and without outside assistance, which leaves the purchasing agent a free hand in buying. The tests made for production, engineering, or purchasing department should go on record in a similar manner to the specifications. This applies also to all reports, tests, or observations made on material and supplies during progress through, or use in, the whole establishment. Consistently kept up, it will result in a remarkably high degree of efficiency in securing the very best materials and supplies for the satisfactory and economical operation of any plant, and the maintenance of its product at a fixed standard of excellence.

CHAPTER IX

Work Connected with Requisition and Order

Examining and Checking Requisition

THE requisition is in some respects the most important document which comes into the purchasing department. It is the basis for all purchases; from it emanate practically all the activities associated with every purchase; in fact no purchase should be made without a requisition. Owing to its importance it is absolutely essential it should be thoroughly checked and examined to enable the subsequent work connected with it to proceed with accuracy and dispatch. After perusing the remarks which follow in regard to the preparatory work on a requisition, it will be fully realized how necessary it is to have the information records described in the last chapter in good shape and fully up to date.

A form of requisition is shown in Figure 21 which would answer for a manufacturing establishment; for some kinds of construction work it is not so suitable. Modifications can be made in any of the forms illustrated here as the needs of the case dictate. Whatever the nature of the business there must be a requisition for every purchase made. It may be in duplicate or triplicate according to the method of procedure. In most cases it is in duplicate, the original going to the purchasing department, and the copy being kept in the department where it originated. In such cases a

copy of the purchase order would be sent to the maker of the requisition. An alternative method is to send two copies to the purchasing department, where one is marked with order number, date of delivery, and other particulars, and returned to the maker.

PURCHASE REQUISITION

DATE _____ REQ. NO. _____
REQUIRED FOR _____ ACCT. NO. _____
DELIVERY WANTED _____ DELIVER TO _____
QUANTITY IN STOCK _____ MAX. _____ MIN. _____

APPROVED _____ SIGNED _____

THIS SPACE FOR USE IN PURCH'G DEPT.
CHECKED BY _____ SPEC. NO. _____
PRICE _____ TERMS _____ ORDER NO. _____
ORDERED FROM _____

FIGURE NO. 21.—Purchase requisition. This form is suitable for a manufacturing establishment and can be of a size convenient to describe the goods usually requisitioned.

The former method is usually preferred as it involves less work.

It is absolutely imperative that the requisition should be signed by some authorized person, and that the quantity and description of material required be clearly and distinctly stated; also date delivery is wanted. These things are indispensable in any

requisition; other information is necessary in some cases, but optional in others. Requisitions for material going into storeroom should state quantity on hand, maximum and minimum allowable, and for what purpose required. These particulars are not always available in construction work, but other details, depending on location and class of work, would be necessary.

The requisitions must be numbered. If the business is a very large one with many departments, they can be numbered when printed and a letter placed before the number to distinguish the department, or they can be numbered as they arrive in the purchasing department. In the latter case the copy kept by the department making the requisition can have its number inserted when they receive copy of order, as it will appear on that.

Requisitions for some materials and *always* for supplies should be made at regular and stated intervals. This will enable the purchasing agent and storekeeper to keep better track of the quantities being used, will enable the purchasing agent to buy fixed quantities at stated periods, and will simplify the work of both offices and make the course of procedure easier.

All requisitions should, if possible, go through the purchasing agent's hands. In some offices this is not feasible owing to the large number of requisitions which come through for small items. These can be dealt with by an assistant, but the more important requisitions should have the personal attention of the head of the department. All requisitions will first be examined to see whether they have been signed by

some person with the necessary authority to do this. A list of the persons authorized to make requisitions should be kept in the department. They must then be checked with production order and with the maximum quantity or amount the purchasing agent is allowed to order. They should then be compared with record of past purchases. The object of this being to ascertain the quantity used in a given period, and to determine whether they should be bought in larger or smaller quantities. In this connection the unit cost of delivery has to be considered. The purchasing department is not a commission house and some latitude must be allowed it. Always, however, strictly in conformity with the known requirements of the business.

It will also be necessary to see that the material is properly described or specified, and if necessary a copy of the standard specifications must be attached to the requisition. It has already been pointed out that standard specifications and proper descriptions are very essential, in fact they are indispensable to good buying.

Pricing Requisitions

It may be found that the requisition is for material for which a price has been agreed for a fixed period with a supplier, also terms and time required for delivery. In such cases the order can be made out at once, provided the requisition has passed the preliminary checkings and examinations satisfactorily.

Frequently arrangements can be made to have the material carried in stock by the manufacturer and taken as required by the purchaser. The prices

would of course have been arranged to cover a period of probably six or twelve months, the buyer being protected on an advancing market, with the benefits of a declining market accruing to him. It may look as if the seller is taking big chances of making losses instead of profits, but it is an economical possibility for such business to be done with advantages for both sides, and probably all good purchasing agents secure in some way the benefits of this form of buying.

In determining whether the quantities requisitioned should be increased or decreased, there are many factors to be taken into consideration. The larger quantity might be bought cheaper with lower transportation charges, but against this must be balanced the disadvantages of stocking too much material and the losses it would entail in unremunerative investment, additional insurance, space occupied, possible depreciation, etc. There are many other considerations also to be carefully weighed which were gone into fully in previous chapters.

Obtaining Quotations

When a requisition covers material for which there is no agreed price with the supplier, or when the price agreement expires, new quotations must be obtained. For this purpose a form similar to Figure 22 can be used. Reference should be made to the sources of supply card already described, and the inquiries sent to as many firms as are necessary to get the lowest prices, best material, and suitable delivery. A copy of this inquiry with a list of all people it was sent to must be kept with the requisition until finally disposed of.

JOHN DOE & COMPANY
360 CANNON STREET
NEW YORK CITY

_____ 191

To_____

_____

_____

Please quote on this sheet in space indicated below for the articles described. If you are unable to furnish same in accordance with our description and wish to offer a substitute, please give full details.

This inquiry is in duplicate, original must be returned to us properly filled out, duplicate to be retained by you.

No charges will be allowed for packing or cartage.

This is not an Order.
Quotations must be in
this Office by_____

_____
Purchasing Agent.

ITEM	QUANTITY	DESCRIPTION	LIST PRICE		DISCOUNT	NET PRICE	

TO JOHN DOE & COMPANY.

We quote you as above F.O.B._____Shipment can be made in_____days from receipt of order.

Terms_____

Date_____

FIGURE No. 22.—Form of inquiry for obtaining quotations. Regular letter head size.

When these quotations arrive in the office, they should be entered on a card or sheet similar to Figure 23. It may be found more convenient to enter the names of all the people who have been invited to tender on this card at the time the inquiries are sent out. It can then be readily seen when all the quotations are in. These quotations will have to be very carefully considered and analyzed and scrutinized from all angles; questions of freight and time of delivery must be taken into account, as well as the reputation and past performances of the bidders. There may be substitutes offered which deserve investigation. Having weighed all these matters carefully and everything else being equal, the question of price should be the deciding factor. All of these points would of course be passed upon by the purchasing agent himself, the comparative statement of the bids having been drawn up and submitted to him by the price clerk.

Final Negotiations

It may be necessary at this stage, if the order is an important one, for the purchasing agent to interview some of the bidders in reference to certain phases and details of their quotations, which will enable him possibly to obtain better terms, arrange shipments to fit in accurately with the known requirements, and in doing this make it easier for the financial department.

When formal invitations have been sent out asking for quotations, then letters of declination should be sent to unsuccessful bidders. Business courtesy demands this, and time and trouble can be saved by

COMPARISON OF QUOTATIONS

MATERIAL _____ DATE _____ REQ. NO. _____

BIDDER'S NAME	PRICE	TERMS	FREIGHT	NET	SHIPMENT PROMISED	REPUTATION	PREVIOUS SERVICE

ORDER PLACED WITH _____ DATE _____ ORDER NO. _____

REASON _____

FIGURE NO. 23.—Comparison of quotation card. Size 6 x 8 inches.

doing it. Neglect in notifying bidders imposes on the purchasing agent or department the necessity of answering by telephone and correspondence questions regarding quotations which have long since been disposed of.

JOHN DOE & COMPANY
360 CANNON ST.
NEW YORK

_____

To_____

_____

_____

GENTLEMEN,

Referring to your quotation of_____
for_____
we have to advise you that we have been able to obtain more favorable figures than those named by you, and the order has been placed.

Thanking you for the attention you have given the matter, we are

Yours very truly,

JOHN DOE & COMPANY.

_____

Purchasing Agent.

FIGURE No. 24.—Form of circular letter notifying bidders that the order has been placed.

If all the features leading up to this stage of the transaction are reviewed, it should reveal a situation in which the purchasing agent can be positive he is in a position to close it on the most favorable terms and conditions possible. Starting with his sources of supply record, if this has been kept up in good shape, he knows that the people he has asked for quotations

are the very best in the country to furnish him with what he wants, he knows they are in a better position to quote him favorable prices and to give him best service. He has arrived at this conclusion by a process of selection and elimination. He knows his specifications have been correctly and accurately drawn. He knows from his records of past purchases and future requirements the exact dates on which he must have delivery, and having arranged terms and method of payment he can confidently close with the assured feeling that he has done his very best, and brought the negotiations to a successful conclusion.

Orders and Method of Handling

The order form varies considerably, in fact it would be difficult to find two with exactly similar wording, but there are essential features in all which are intended to convey the same interpretation. Figures 25 and 26 show forms of orders which will be found suitable for many concerns. In filling in the body of the order it should be stated definitely, clearly, and concisely what is required. If a lengthy specification is necessary, then it should be referred to by a distinctive number or letter and date, and a copy attached to the order. Any drawings, blue prints, or sketches should likewise be quoted, and they should accompany the order. If it is an order for some minor supplies, such as twine or wrapping paper, specify exactly what is required. The proper description of all the standard supplies should be on file and should be referred to. A great deal of time may be saved by doing this. A manufacturer would probably have several grades or kinds, all of which might come

under an incomplete description, which means that information would be requested as to which was required, and consequently delay would occur.

Some orders are sent out with an attachment for acknowledgment, but this is not recommended. It is treated in a very perfunctory manner. It is probably better to enclose a post-card (see Figure 27), as this scheme gets more recognition and can be used to obtain a promised date of shipment. Another good purpose served is that the post-card, being the same size as tickler card, can be filed with it in the follow-up file. The whole story of acknowledgment and promises regarding the order are then kept together.

Several copies of the order have to be made. Some use a card for the copy to be kept in the purchasing office, but if the card is stiff it does not give satisfaction in the typewriter and a good impression is not obtained. A copy is usually sent to the department which made the requisition, sometimes a copy to the storekeeper, and sometimes to the accountant, depending on the methods in vogue. The printing on all copies need not be the same, but they should register and the spacing should be arranged to suit the typewriter, as this saves considerable time. All copies should be distinctive as to color, as this facilitates distribution and prevents any mix up.

The example given of an order form (Figure 25) is numbered in the right-hand top corner, as it is intended to keep the office copy in a post binder, and in this position the number is more readily seen. The numbering should be done when printed and should be in large, bold figures. A few extra order sheets

with numbering omitted can be kept on hand for use in replacing spoiled sheets so that there is no break in the numbering. The margin on the left would in the copies be blank and perforated for binding. If it is not desired to have the price appear on any of the copies, it can be omitted by inserting a slip when the order is being written, or using short carbons.

Before mailing the order, it should be checked. A stenographer may add a cipher making it read 2000 instead of 200, or make an error in the size of an article, the consequences of which might be serious and involve the concern in heavy financial losses.

Having got rid of the original, the copies can be sent out to the departments interested. The requisition which would have been in use until now, can be permanently filed away. A post binder is best for this purpose; it enables a large number of them to be kept in compact form and easy reference can be made to them at any time. The order number should be inserted on the requisition and the requisition number on order. The copy of order remaining in the purchasing department should be filed in a similar way, but it will be temporarily placed in the "live" file of uncompleted orders and later transferred to the permanent file when complete deliveries have been made.

Immediately the order is sent out, the purchase order record must be posted from it, also the record of past purchases and prices. Both of these operations have been described in a previous chapter and illustrations given of some forms suitable for the purpose.

Following up Orders

If an order has been placed under the most favorable conditions as to price, terms, and date of ship-

Purchase Order Number must appear on Shipping Receipt, Invoice, Correspondence, or any communication connected with this order.

JOHN DOE & COMPANY
360 CANNON ST., NEW YORK CITY

Date_____ Req. No._____ Purchase Order No. 3047

To_____

Address_____

Please ship to_____

Shipment to be made_____ via_____

PRICE

TERMS_____

Purchasing Agent.

FIGURE No. 25.—Form of order.

ment, still the whole economic value of the purchasing department might be lost if the goods were not delivered on time. If they were for a factory, it might

JOHN DOE & COMPANY 360 CANNON STREET NEW YORK	DATE_____ PURCHASE REQ. NO._____ ORDER NO._____ TO_____

PLEASE SEND US THE UNDERMENTIONED GOODS:

Shipment to be made_____ via_____

Acknowledge receipt of this order stating whether you can ship on date named.

IMPORTANT

Invoices must be rendered in duplicate and bear above order No.

Purchasing Agent.

FIGURE No. 26.—Form of order as a substitute to Figure No. 25.

have to work overtime to complete a contract or perhaps lose it altogether, and in construction work the non-arrival of material of only one class might delay the work of every class of mechanics. It is very important therefore that this phase of the work receives close attention. There are many schemes in vogue for taking care of it. A good one is given here and suggestions regarding others. A tickler system, to be efficient in securing results, must be prosecuted with energy. It comes into being with the placing of an order, has a short and vigorous life, and dies when shipments on order are completed.

DATE_____

This acknowledges receipt of your Purchase Order No._____

Dated_____ For_____

Shipment will be made_____

_____

SIGNED_____

FIGURE No. 27.—Post-card to be enclosed with order to secure an acknowledgment. Size 4 x 6 inches.

Tickler Systems

Many concerns send out with the order some form of acknowledgment which usually contains a space in which a promise can be inserted regarding shipment as already suggested (see Figure 27). It may be advisable in some cases to send a copy of the order with the original and have an acceptance indorsed on its face. In any case the date of shipment should

be recorded on the tickler card, Figure 28. This card should then be placed in the tickler file under the date goods should be shipped, or in advance, to enable a clerk to send a notice to the party holding the order. The date should be noted on copy of order to insure locating the card promptly.

If these cards are kept in force, no shipment dates can be overlooked, because they come up automatically each day. Under the space headed "nature of tickler" or "promise" a memorandum should be made

NAME_____ DATE_____ NO._____

DATE OF TICKLER	NATURE OF TICKLER OR PROMISE	DATE OF PROMISE
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

FIGURE No. 28.—Tickler card for following up orders. Size 4 x 6 inches.

of each inquiry sent out regarding the order and each reply. This obviates looking up correspondence. Some purchasing departments keep a tickler system by using thirty-one pigeon holes, one for each day in the month, and placing the cards or an additional copy of the order in them, but the file system is preferable. It can be made to cover as many months as desired, takes up less space, and is more convenient. When an order is completed the card is of no further value and can be destroyed.

Another scheme for a tickler system is to have an additional copy of the order made and file it in a date file, such as already described, sufficiently in advance of the actual date of shipment so that a follow-up notice can be sent to shipper in time to insure its dispatch on the specified date. This extra copy need only be made of those orders on which a follow-up is necessary, and it can have special rulings on back if desired for the purpose of noting promises regarding shipments. If the card system is not adopted this

To_____

_____

GENTLEMEN,

Our records show that you have our Order No._____

Dated_____ Calling for_____

Please advise when shipment will be made using return portion of this card.

Yours very truly,

DATE_____ _____

FIGURE No. 29.—Reply post-card to obtain promise as to date of shipment.

scheme will be found excellent; it dispenses with the work of making out the tickler card and all information regarding the follow-up is self-contained on the copy of the order which is a great advantage as with the card system there is sometimes a necessity to refer back to the order.

It is necessary to remind the seller of the approaching date of shipment. Some orders are so important that inspectors have to be on the ground and report progress. In other cases a strong letter from the purchasing agent is sufficient, but for the ordinary run of orders a printed form will probably answer the

purpose. It can be simply a request for date of shipment or worded imperatively as occasion demands. The reply post-card scheme brings very good results (see Figure 29), and an advantage connected with this is that the reply half of the card can be filed with the acknowledgment card, Figure 27, and the tickler card, Figure 28, thus keeping all cards together pertaining to following up the order.

If it is desired to send out a printed letter form of inquiry regarding shipment, something similar to Figure 30 is suggested. This would answer the purpose for those concerns who object to the use of post-cards. If a form similar to this is used it can be done in conjunction with the scheme outlined above for using a copy of the order for the tickler system. By having the form shown in Figure 30 the same size as the order it can be filed with it which is a great advantage.

Recording Shipments

There are innumerable schemes for recording shipments made against an order. The best for any particular case will largely depend on the nature of the orders themselves. If they are mainly for articles which will be dispatched in one shipment, it is easy to arrange the copy of the order, which remains in the purchasing agent's office, with a space on the face of it which can be used for recording the shipment. But where the orders are mostly for large quantities and the execution of them involves many shipments, the back of the copy of the order can be ruled for keeping the record (see Figure 35 in next chapter). It is of great importance to obtain prompt advice

of these shipments and have the traffic man follow them up, particularly in those cases where a manufacturing establishment is not carrying a heavy stock of raw material, but working on a very close margin.

JOHN DOE & COMPANY
360 CANNON ST.
NEW YORK CITY

_____ 19

To_____

_____

_____

_____

Please advise us immediately when you will make shipment of our order No._____ dated_____ using space below for reply.

Yours truly,

_____

Purchasing Agent.

NOTE.—If whole or partial shipment has been made give particulars of same.

_____

DATE_____

The material referred to on above order will be shipped on_____

from_____ via_____

REMARKS:

_____

_____

Shipper.

FIGURE No. 30.—Request for information as to shipment of an order. Size should be the same as the copy of order with which this will be filed.

In these cases the supplies must come in regularly and promptly. There are also certain raw materials which from their nature cannot be carried in stock any great length of time, and frequent and regular deliveries are necessary. When the information regarding a shipment has been properly recorded in the purchasing office, the advice or a notification of it should be turned over to the traffic man and to the storekeeper or receiving clerk to enable them to take care of their duties in expediting delivery and in receiving and arranging storage. Frequently the shipping advice, invoice, and bill of lading will all come in together.

After all material has been received as called for on the order, and the invoices have been checked against it, it should be withdrawn from the "live" file and placed in the completed or "dead" file. The orders can be kept indefinitely for reference at any time and owing to the manner of filing them very little space is required to store several thousands with their accompanying requisitions and other records connected with them.

The method outlined will fit with modifications a great diversity of businesses whose activities are widely different. There are some, however, in which the procedure would have to be varied from that described. Take for instance a concern which issued comparatively few orders, but each order involved considerable correspondence and there was a large accumulation of papers in connection with each one. In such a case it would not be advisable to scatter the correspondence and reports through the general file, but all of the documents connected with the order

should be collected in a folder, including copy of order, comparison of quotations, etc. It would be found that reference to such papers would be much easier if kept in this way.

Emergency Orders

Even in the best regulated establishments there will be occasions when orders have to be given for material and supplies without going through all the various procedures usually regarded as necessary and prudent and which are outlined in this chapter. No amount of foresight on the part of the purchasing agent is a protection against a lapse by a member of some other department to remember something. A breakdown in the shop or an accident to, or failure of some material being fabricated may be the occasion of rush orders. If there is no time to obtain quotations a well organized purchasing office can confidently issue an order, knowing that the complete and authentic records which are in the office will enable the clerk who checks the invoice to do so intelligently and not approve it unless a fair price is charged.

In such cases as cited in last paragraph it is the practice of some purchasing agents to send a form letter to the party with whom the order is placed asking them to name the price. On receipt of this the regular official order is issued. This enables the order clerk to insert the price on every order issued, which is a regulation strictly adhered to in some offices. Probably, however, the material would be shipped before price was received and it is no protection against an excessive price being charged. There are some purchasing offices who from the very nature

of the business must issue a great many such orders daily, and in those cases dependence must be placed on the records of prices kept in the offices to secure fair and just treatment. This emphasizes the importance of keeping all information and data in good shape and up to date.

CHAPTER X

Invoices and Methods of Handling

General Considerations

THE work in connection with invoices ranks with the most important operations of the department. The order may have been placed to the very best advantage as regards quality, price, delivery, and terms, but all of these benefits may be lost if the invoices are not dealt with in such a manner as to insure their being permanently secured. This is done by careful and prompt checking. Careless checking might mean that prices were approved in excess of those stated on the order, and delay in handling the invoice might cause the loss of cash discount, and in addition the loss of indirect and contingent advantages which accrue from the prompt approval and payment of invoices.

It is the custom of some offices to insist on the use of uniform invoice forms. These are sent out with the purchase order, and the order itself contains a clause to the effect that they must be used when invoices are rendered. It is a proceeding which has been much criticized, and great difficulty has been experienced in getting it adopted. All the advantages of such a scheme are on the side of the buyer. To the vendor it is a source of trouble and annoyance and interferes with his accounting methods. To a limited extent all business houses get a certain amount

of advertising from their stationery and are recognized impersonally from it. There is no individuality for the vendor in the uniform invoice, and unless it can be brought into universal use it will be very unpopular with some houses.

To any person unaccustomed to the handling and paying of invoices it might seem inconceivable that any large establishment with an up-to-date accounting system could pay an invoice twice. Yet this is an occurrence of more or less frequency with both large and small businesses, and will probably never be entirely overcome while the human element is a factor in dealing with the invoices. If the method outlined here is followed, it should be impossible for duplicate invoices or invoices covering the same material to be approved twice. If it was just a question of duplicate invoices, that is invoices bearing same date, for the same material and the same amount, the matter would be simplified because these are more easily detected. But there are other complications, such as two invoices being rendered for the same material but inadvertently bearing different dates; also where, say a party has an order for 120 articles with instructions to ship twenty by express and balance by freight. The twenty are supplied and invoice mailed, the balance of 100 may be shipped by freight the same or next day and another invoice rendered, this time for the full quantity of 120. There are several other ways in which invoices can be made out improperly but inadvertently and containing charges for material and supplies, not actually shipped. But these illustrations will suffice to show that it is entirely the province of the purchasing department to prevent

approval of them, for if they once get through there they will probably be paid. An accounting department vouching many thousands of invoices each month will look to the purchasing department for protection against such errors as cited, therefore, the safeguards must be foolproof. In small offices where proper precautions are not taken invoices frequently get through and duplicate payments are made. Handling the smaller quantity makes no difference in this respect for the bookkeeper receives the invoices daily and probably posts them in his ledger without considering the order of date. At the end of the month he may make out a pay statement of the invoices for which check is to be sent and does not perceive that he has two similar amounts of the same date.

Many purchasing offices do not keep a register of invoices as it is looked upon as an unnecessary addition to the work with no compensating advantages. In some cases, however, it is indispensable, particularly where invoices have to be sent out of the office to some other department for approval. If a record is not made and the invoice cannot be traced, it may be side-tracked and payment delayed. The seller is entitled to his money in accordance with the terms of the contract, and the purchasing department must do its part in the routine work by passing his invoice promptly. Where a cash discount has been arranged, it is important to see that the invoice is passed through for payment before the expiration of the time the discount is available. Where the purchases are large and are of a nature in which cash discounts are customary or have been agreed upon, it is very expedient that the fullest advantage should be taken

of the arrangement and the economic benefits secured. During the course of a year the amount saved by discounting invoices will be considerable, in addition to which it adds to the reputation of the concern and puts more power into the purchasing agent's hands when buying. Any business house will give preference to and favor relations with buyers from whom prompt settlements can be positively relied upon.

In some cases it is the practice for the accountants to receive the invoices and check them against material received and in all other respects, with the exception of price, which is checked in the purchasing department. It is a matter of the most suitable arrangement for the smooth and economical operation of the whole establishment, but it certainly should be up to the man who buys the material to certify that the price is correct and the quality right. Whatever course the invoices take in passing through the various stages of certification, these two things distinctly belong to the purchasing department. It is the opinion of many that the department should be made entirely responsible for the invoice up to the last stage when it is vouched for payment. This, however, is not feasible in large establishments where the ramifications of the work of the accounting department cover the bookkeeping functions of stores and production costs with which invoices are closely allied or interrelated.

Recording Invoices

In every case, irrespective of the nature or magnitude of the business, the invoice should go in the first place to the purchasing department and a record

INVOICE RECORD

SHEET NO._____ NAME OF FIRM_____

DATE	AMOUNT		RECEIVED	SENT TO DEP'T NO.	DATE SENT	DATE RETURNED	SENT TO ACCOUNTANT	DATE	AMOUNT		RECEIVED	SENT TO DEP'T NO.	DATE SENT

FIGURE NO. 31.—Invoice Record. Loose leaf ledger form with margin on left for binding.

be made of it on some method similar to that shown in Figure 31. This is a loose leaf ledger arrangement, and the pages can be as wide as occasion demands, repeating the ruling as necessary. When the invoices are listed in this record, a watch should be kept to detect duplicates, and if any are discovered bearing the same date and for the same amount, an investigation should be made, for this is the first test the invoice passes through and improper or irregular ones should be immediately suppressed.

Preliminary Work

After recording the invoice the first thing necessary is to scrutinize the date when payment will be due to secure the cash discount and an effective method adopted of keeping this date prominently before all persons with whom the invoice comes in contact. It is customary in some offices to paste a small sticker, similar to Figure 32, on the invoice, calling attention to the date the invoice must be paid to make the dis-

DISCOUNT EXPIRES

DATE

FIGURE No. 32.—Attachment for invoices to indicate date on which discount expires. Size about 2x2 inches.

count available. This should be preferably a striking color which can be readily seen, and serves to call the attention of everybody who handles the invoice to the fact that it must be through by the specified date.

It is also necessary to adopt some uniform method of providing space for certifying the invoice. If there was room on the face of every invoice a rubber stamp would answer the purpose, but this can be done only with a limited number. In small offices the practice

DATE _____ FROM _____

PURCHASE ORDER NO.	QUANTITY	DESCRIPTION OF MATERIAL
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

QUANTITY _____	EXTENSIONS _____
QUALITY _____	F.O.B. _____
PRICE _____	FREIGHT _____

CLASSIFICATION	AMOUNT	
.....	.....	.....
.....	.....	.....

APPROVED _____

FIGURE NO. 33.—A form similar to this can be attached to each invoice to insure proper certification. No invoice should be vouched for payment until this form has been properly initialed in each space by the persons checking invoice. Size about 5 x 5 inches.

of rubber stamping the invoices on the back is resorted to and answers admirably, but in large establishments this is not feasible. It is impracticable to turn every invoice over to examine its many certifications, and when they are in voucher form the auditors must be able to get at these features clearly and quickly.

A form is shown, Figure 33, which can be pasted along one edge and affixed to the invoice without obliterating any part of it. Sufficient information is written on this to identify it completely with the invoice, and spaces can be arranged on it for all the signatures required by the auditing system of the company.

A much smaller form can be used, similar to Figure 34, and this may answer the purpose of some small accounting systems. It has one great objection in that it is not positively identified with the invoice. One of these forms could be detached from an invoice

INVOICE CHECKED

For	By
Goods Rec'd	.....
Quality	.....
Price	.....
Extensions	.....
Charge to	.....
Approved	.....

Figure No. 34.—An alternate to Figure No. 33 to be used in checking and approving invoices. Size about 2x3 inches.

for 50 cents and attached to one for $1000 without detection. As a measure of protection, where invoices are handled by several people, no claims can be made for it and it should only be used where the clerical work on it is done by one man.

Checking Invoices With Order

In all properly organized systems the checking of invoices follows a well-defined and consistent course, which should be well planned, avoiding laboriousness and undue delays. The invoice should be checked against the order to see whether it corresponds with the price and terms stated, and should be recorded on the order itself. This procedure should entirely eliminate any possibility of the material or any part of it being paid for twice. If the instance already quoted is taken, of an order which was placed for 120 articles, twenty to be shipped by express and 100 by freight, it will readily be seen that when the invoice for 120 articles came in and the clerk went to record it on the copy of the order he would find that an invoice for twenty had already been passed and immediately detect the error.

This method of entering invoices on the copy of the order itself is a check against overshipments. An order may be placed for 5000 pieces of goods or articles which are to be shipped in comparatively small lots, and unless a record is kept the supplier might continue shipping indefinitely if it suited his purpose long after the 5000 were actually delivered.

Figure 35 shows a scheme for ruling the reverse side of the copy of order kept in the office and an entry of all shipments and all invoices should be

made here, or if the order is one which involves only one shipment and one invoice it can be recorded on the face of the order. The majority of orders sent out by many purchasing offices are probably filled in one shipment, and the ruling on back of the order, would be used at rare intervals. In a case where a very large number of shipments are made on an order, additional sheets printed similar to Figure 35 can be inserted in the binder with the copy of order, and should be given the same number for purposes of identification.

In checking and comparing the invoice with order not only the price and terms are checked, but it

SHIPMENTS			INVOICES			REMARKS
DATE	QUANTITY	VIA	DATE	QUANTITY	AMOUNT	

FIGURE No. 35.—Reverse side of copy of order which is kept in purchasing agent's office. This is used for recording shipments and invoices made against the order.

should be seen that the description corresponds, that the size and weight are correct, also the quality specified. In cases where the material is subject to inspection before delivery the inspection reports must be referred to, to see if it complies with the specification and has passed a satisfactory test. There are various forms of inspection reports and some of them may come from one of the firms of inspecting engineers engaged for the work. If the reports are made by men in the employ of the establishment a form similar to Figure 36 can be used. When completely checked with the order a distinctive check

INSPECTION REPORT	JOHN DOE & COMPANY 360 CANNON ST. NEW YORK CITY	COPIES TO _____ _____ _____

MATERIAL_____

PURCHASED FROM_____

INSPECTED BY_____ AT_____

DATE INSPECTED_____ DATE REPORT SENT IN_____

REPORT APPROVED BY_____ DATE OF APPROVAL_____

NATURE OF INSPECTION AND TESTS

_____

_____

_____

_____

_____

_____

FIGURE No. 36. — Inspection report. If the original does not go to the purchasing department a copy should always be sent there.

mark should be made on the invoice to show it has been done.

Checking Invoices With Material Received

The checking of invoice with material received is the third preventive against approving invoices twice for the same material, and should be just as sure in its operation as the check against the order. There is always some method of recording the receipt of material and Figure 37 shows a sheet which can be used by the receiving clerk, storekeeper, or whoever receives the material and makes the record. It can be seen that when an invoice is checked with the material received and initialed by the person doing so, it should be impossible for this operation to be repeated for the same material. This form, Figure 37, is a duplicate of the one kept by the storekeeper with the exception of the last column. The copy going to purchasing or accounting department is arranged for checking invoices, and the storekeeper's copy for his perpetual inventory record. In some establishments the receiving clerk or storekeeper has to sign the invoice, but it involves additional traveling around for the invoice and loss of time. Invoices seem peculiarly liable to get lost and mislaid, and the elimination of any possibilities in this direction is desirable.

In some establishments the purchasing department has nothing to do with checking the invoice with material received, this work being done in the accountant's office. The organization of the work of the various departments should govern this. If the stores are entirely separate from the purchasing, it would probably be done in this way.

MATERIAL RECEIVED SHEET

SHEET NO. _____

DATE _____

PURCHASE ORDER NO.	RECEIVED FROM	VIA	QUANTITY	DESCRIPTION	SIZE	WEIGHT	REC'D BY	CHECKED WITH INVOICE

FIGURE No. 37.—Loose leaf sheet for listing receipt of material. This is arranged for use in purchasing office. The last column should contain the initials of the person checking the invoice with material received. Size 11 inches wide, depth to suit.

A scheme adopted with success in some plants is for the receiving clerk to list the articles or material received on the reverse side of his copy of the order which is ruled specially for that purpose. This is then attached to the invoice and serves the same purpose as the form shown in Figure 33. This method has one great drawback which is that orders having many shipments and invoices rendered against them must have supplementary forms for approval of all invoices before the final one to which copy of order is attached.

Checking Prices

There are always some orders sent out on which the price is not quoted, and the invoices received against these must be carefully checked to see that price charged is correct. The order may have been a confirming one to cover an emergency purchase and no price arranged. It must be examined therefore and if the price charged is not a fair one it should be taken up with the suppliers. In doing this and in going through the invoices for errors in prices, changes in list or net prices, also in discounts, must be noted and recorded on the price cards.

Emergency orders are probably issued by every purchasing department. This is done by telephone or letter and sometimes the official order is not mailed until a price has been fixed. This is to enable the price to appear on every order, but it is doubtful whether any better prices are obtained than those secured by a good man checking the prices on invoices rendered against such emergency orders. There are some establishments where the character of the business

necessitates the issuance of a large number of these orders daily, and the holding back of the regular official order until a price were arranged would lead to endless confusion.

Checking Freight Charges

If there are any freight charges or freight allowances in connection with the invoice, the traffic man must check and approve these. It is quite customary for the shipper to sell his product f.o.b. the shipping point, but with freight allowed to a competitive point or to destination. These charges are sometimes paid

NOTICE OF FREIGHT CHARGES PAID

There has been paid by_____

$_____ For freight charges on_____

Shipped by_____

From_____ Car Nos._____

Purchase Order No._____ Reads F. O. B._____

This freight should be charged back to shippers.

Date_____

_____

FIGURE No. 38.—Notice regarding freight charges. Size 5x8 inches.

by consignee, and in other cases an allowance is made on the invoice. If the consignee's factory is located, or material received, at some distance from head office, an advice should be sent to the purchasing office of any freight paid to enable the traffic man to check it and see that the proper credit is obtained. Figure 38 indicates a form of advice to accountant regarding

this. If the invoice has already gone through there should have been a notation on it about the freight allowance, and this advice will be a confirmation of it. Express charges are another thing which should be closely watched. When delay has occurred in making shipment and urgent calls are sent for the material, a shipper will frequently send it by express, but omit to pay charges. If the delay is the fault of the consignor he should be debited with the charges, or the difference between freight and express charges.

Checking Extensions

The checking of extensions is done more often by the accounting office than by the purchasing department, and when it falls to the latter to take care of it the work must be designated to some person who is familiar with trade discounts as these appear very frequently.

Classification

The classification of an invoice or the allocating of the amount among several accounts will also probably be done by accountants, but if done in the purchasing office it must be seen that it appears on the slip in the space shown in Figure 33 or Figure 34, whichever is used.

Approval

The approval of the invoice as far as it concerns the purchasing department may be covered by the various checks it has already had, each of which will have been initialed by the clerk who handled it at the time. The final approval required by the auditor will prob-

ably be the accountant's to certify that the proper charges or credits have been made to the factory accounts. Its final exit from the purchasing department should be recorded on the form on which it was first entered (see Figure 31).

CHAPTER XI

Operation of Stores

General Remarks

THE operation of the storeroom may or may not come under the jurisdiction of the purchasing agent, but whether it does or not, the receipt and control of raw material and supplies are so closely allied to the purchasing department, that some description of the duties pertaining to the work and the course taken by the material until its final consumption or disposition is necessary to complete the object of this book.

If the purchasing agent is held responsible for purchases to keep a manufacturing plant running, it does not seem right that he should have no voice in the maintenance of stock, and, in conjunction with the heads of departments interested, a voice in determining the maximum and minimum quantities kept on hand. For on the latter depends quite often the price to be paid.

There are always losses in producing anything in each stage of its development. There is a loss in the labor item from "soldiering" or some other cause, and there is a loss in material from waste, pilfering, etc. It is the mission of the stores department to prevent this. A loosely kept storeroom without a proper system, is one of the most fruitful causes of losses, but it can be eradicated altogether, or reduced to an

imperceptible minimum by the receipt, control, and delivery of all material used through a well organized and systematized stores system. There are four points to consider:

1. The receipt of materials and supplies into stores and their accurate recording.
2. The storing in convenient and safe places and receptacles.
3. The delivering of the right materials to the right persons.
4. The keeping of an account of the stores in an accurate and efficient manner.

Receiving Materials and Supplies

In some establishments the storekeeper receives all materials, but in the larger ones there will be a receiving clerk, whose duties will be to receive and receipt for all articles coming into the establishment and deliver them to the stores and sometimes directly to the department.

He should not receive anything unless he has a copy of the purchasing agent's order, which he should refer to and compare with the arriving material. If this is not done he is liable to receive goods not ordered, or which have been canceled, thereby getting the purchasing department in trouble and probably causing loss to the establishment. Quantities in excess of those ordered should never be received without consulting with the purchasing agent.

The receiving clerk will probably report directly to the accounting department, sending copies of his lists of materials and supplies received to the purchasing agent and storekeeper. Whether the store-

MATERIAL RECEIVED INTO STORES

SHEET NO._____

DATE_____

PURCHASE ORDER NO.	RECEIVED FROM	VIA	QUANTITY	DESCRIPTION	SIZE	WEIGHT	REC'D BY	ENT'D PERP'L INVEN'Y

FIGURE No. 39.—Material received sheet. The last column on this sheet is used for initialing the item when entry is made on perpetual inventory. In other respects it is similar to form shown in Figure No. 37 with which it should register.

keeper received the material or not when it first arrived into the establishment, he has to receive it into the storeroom with proper checks and records.

If reference is made to the forms shown in Figures 37, 39, and 40 a clear understanding can be had of the method outlined for recording receipt of material. All three of these forms are not always necessary, but two of them must be used whether there is a receiving clerk in the establishment or not. The storekeeper must have one list to enable him to enter the material on his perpetual inventory and another list must go to the purchasing or accountant's office for the purpose of checking invoice.

Figure 39 illustrates a method of listing the material. This is arranged in a similar manner to the copy sent to the purchasing agent, Figure 37, the only difference being in the last column. This is used by the storekeeper when making his entry on the perpetual inventory, whereas in the purchasing department the duplicate form, Figure 37, is used when checking invoice with material received. This sheet represents to the storekeeper what the journal does to the bookkeeper, and he debits each account on his perpetual inventory, which is his ledger, with each item on the receiving sheet.

The copy of the report of materials received into stores which goes to accountant's office will probably need a column for inserting the value of the goods, as shown in Figure 40. If three copies are made, they should register with each other, the only difference being in the last column. This difference is caused by the fact that the storekeeper is mainly interested in quantities, whereas the accountant's interest is prin-

MATERIAL RECEIVED INTO STORES

SHEET NO. _____

DATE _____

PURCHASE ORDER NO.	RECEIVED FROM	VIA	QUANTITY	DESCRIPTION	SIZE	WEIGHT	REC'D BY	VALUE	

FIGURE No. 40.—Copy of material received sheet arranged to go to accounting department. The last column on this sheet is arranged for the value of goods to be inserted which enables the accounting department to condense its work of keeping the stores account. This form should register with those shown in Figures No. 37 and No. 39.

cipally in values. This is the chief distinction in the results accomplished by their bookkeeping.

Having checked the material with copy of purchase ing agent's order, any mistakes on the part of the shipper as to quantity and size can be detected. Should the shipper have exceeded the number of articles or weight ordered, this will also be discovered. If it is decided to return the excess quantity or wrong sizes, this can be done much more conveniently before the material is placed in storage bins than afterward. In large plants there will probably be an inspector to examine materials, but in many cases the storekeeper himself will examine material on arrival and determine, as far as such an examination can do so, whether or not it conforms to the description and specification on order.

If the material is to be subjected to tests, samples must be sent to the laboratory which is maintained in the plant, or to one outside. These samples must be so marked or separated that identification is positive with the shipment they were taken from.

Any questions which arise regarding freight on goods in or out of the establishment must be taken up with the man in charge of traffic, or reported to him.

It will be appreciated from this brief description that the man in charge of receiving goods fills a responsible position in connection with the orders placed by the purchasing department. Among his duties will be the receipt of goods returned from customers, and he should have specific instructions whether to accept or refuse these.

After the material has been received and properly counted, weighed, and measured, there may be some

articles which are sent directly to the departments instead of to the stores with copy of receiving slip, which should be signed and returned to the stores. The entry is made on the stores record exactly as if the material went into and was delivered out of the stores. This keeps the cost accounting department straight.

Another method of reporting receipt of goods, although not generally considered as good as that outlined, is to report each arrival separately and, instead of making a daily list of materials as already indicated by Figure 39, to make out a slip for each shipment as it comes in, somewhat on the lines shown in Figure 41. A copy of this should go to the storekeeper, a copy to purchasing agent, and another to cost department. The last named will require to know destination of material, in order to charge it to proper account.

Another scheme adopted by some is for the copy of the purchasing agent's order to be signed by the receiving clerk as a notification of receipt of material, making out no receiving slip. This has many objectionable features, however, and it would be only in most exceptional circumstances where it would answer satisfactorily. A method in which the copy of purchasing agent's order is used to report receipt of material is shown in Chapter XIII. Wide experience led to its adoption in this case.

It is important that the material-received sheets, or receiving slips should be numbered, as they are liable to get lost or mislaid, and any break in the sequence would at once call the attention of the purchasing or cost department to the fact.

RECEIVING REPORT

Articles listed below have been received today

Date

Quantity	Size or Weight	Description	From	Order No.	Condition

Remarks

Receiving Clerk

Figure No. 41.—A form for reporting the receipt of each arrival of goods. Size about 6 x 7 inches.

The Proper Storage of Materials and Supplies

The proper storage of materials and supplies is of equal importance to receiving and delivering them. When adequate provision has been made for receiving goods, examining them, reporting poor quality or deficiencies, there is the problem of storing them for varying periods. There are several things to be considered. One hundred dollars in the cash drawer would be locked up; there may be one hundred dollars' worth of copper bars in the stores which should be just as secure from theft, or one hundred dollars' worth of rubber which must not be allowed to deteriorate.

The stores, therefore, should not be entered by any unauthorized person and proper receptacles should be provided for all material. It is not possible to give a description that would fit the needs of every business, but generally the stores must be equipped with racks, shelves, bins, drawers, and boxes to suit the nature of the materials.

Some considerations are common to any stores; for instance, material which is constantly called for should be within easy reach, and heavy material should be at a convenient height for loading onto a truck. The alleyways should not be too narrow, as the racks darken them, and insufficient space makes it awkward to get material out promptly. Some shelves and racks are built narrower at top than at bottom which is an excellent scheme for some stores, giving more light and elbow room with no loss in storage capacity.

A scheme which has been adopted by some and may

commend itself to others, is to have duplicate bins or bins extending through from one aisle to the next, the object being to place new material in one side and take the old out from the other side. This is to prevent an accumulation of old stock. Not all establishments can afford the room for this, but it has its advantages, particularly with stores which are liable to deteriorate with age.

In large plants it will probably be necessary to have several storerooms located near departments where material will be used. This may entail some duplication of stores, but will be fully compensated for by the saving in men's time in obtaining stores. Some material can be stored outside, including such things as heavy castings, lumber, fuel, etc., but all should go on store records.

REQUISITION ON STOREKEEPER

This Requisition will not be accepted if order No. is not given, if it is not signed by foreman, or if material is to be charged to more than one order.

Order No.	Quantity	Description	Size or Pattern No.

Date_____ Signed_____

Foreman

Figure No. 42.—Requisition on storekeeper. Size about 4 x 6 inches in duplicate.

Deliveries from Stores

Not less important than the receiving and storing is the delivering of stores. There must be a properly authorized list of foremen or others who are empowered to sign requisitions for withdrawing material or supplies from storeroom. Irresponsible persons should never be given the power, and if the material is small in bulk and high in intrinsic value the foreman's honesty should be dependable. Even then, and with precautionary measures instituted in the shop, some losses will occur from pilfering. There will also always be some losses through waste, but with close watching and safeguarding it can be reduced to the smallest dimensions.

There are two methods of obtaining goods from

DATE	REQUISITION For Material or Supplies	ORDER NO.
QUANTITY	DESCRIPTION	SIZE OR SYMBOL NO.
Dep't No.	Foreman	
Delivered To	Delivered By	

FIGURE No. 43. — Requisition on storekeeper. An alternate to figure No. 42.

stores, the one principally in vogue being carried through by the foreman making out and signing a requisition for what he needs for the product his men are engaged on. Several illustrations of these are given (see Figures 42, 43, and 44). They should state clearly the exact quantity required, with size or other necessary particulars to enable the stock man to deliver material promptly. They should give order number and any details which are essential to the work of the cost department where they will eventually go. They should be in duplicate of contrasting colors, the object of this being that when they arrive in the cost department the originals are easily distinguished from the duplicates. Some cost departments require the requisitions to be ruled with a column for pricing the articles, others do not; this

Date	REQUISITION For Material or Supplies	Order No.

Quantity	Description	Size or Symbol	Price	Value	

Dept No. _____ Foreman _____

Delivered To _____ Delivered By _____

Figure No. 44 — Requisition on storekeeper with column for inserting value by the cost accounting department. Same size as Figures No. 42 and No. 43.

column is for use only in that department (see Figure 44). In some plants it might be advisable to give each department requisitions of contrasting colors, and in large plants the numbers of the requisitions should be prefixed by a distinguishing letter for each department.

The original only is sent to the storeroom, the copy being sent by the foreman, after he has received the material, to the cost department. When the original finally reaches there, they can be checked against each other, preventing falsification on the part of either foreman or storekeeper. The original having been presented at the storeroom, material received and receipted for, it is also sent to the cost department after the necessary clerical work is done in stores. Although not essential, it is advisable to have the

CREDIT

MATERIAL RETURNED TO STORES

ORDER No._____ DATE_____

QUANTITY	DESCRIPTION	SIZE OR PATTERN No.

Dep't No._____ Foreman_____

Delivered By_____ Received By_____

FIGURE No. 45.—Credit requisition for material returned to stores. Same size as Figure No. 42, but a contrasting color.

requisitions numbered, as it facilitates the work of sorting and comparing them on their arrival in the accounting department.

There will be from time to time an excess amount of material withdrawn by foremen, or shop orders may be canceled or curtailed, necessitating the return of some material to the stores. This is effected by the foreman making out a credit requisition, as shown in Figures 45 and 46, the original and duplicate of which he sends with the material, and proper credit is given. The duplicate is signed by the stock man and returned to the foreman, who sends it to the cost department.

Another method of obtaining material from the stores is by means of the material budget. This is used in some factories very satisfactorily, and for certain kinds of production work it answers splendidly.

Date	CREDIT Material Returned to Stores	Order No.

Quantity	Description	Size or Symbol No.	Price	Value	

Dep't No._____ Foreman_____

Delivered By_____ Delivered To_____

Figure No. 46. — Credit requisition for material returned to stores with column for accountant to insert value.

LIST OF MATERIAL REQUIRED FOR

QUANTITY_____ ARTICLE_____ ORDER NO._____ DATE_____

ITEM NO.	NO. OF PIECES	MATERIAL	SIZE	RECEIVED BY	ISSUED BY	DATE ISSUED	PRICE	AMOUNT	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

FIGURE NO. 47.—Material budget or list of material. A copy of this is placed in the storekeeper's hands and is used for obtaining material from stores. Size 7 x 7 inches, copies as required.

But for others it has many disadvantages and is not practicable. Where it can be used effectively, it is a better check on material used than the requisition system; it lessens the accounting work, is a better check on loss and waste in the shop, and brings investigation when more material is required than actually specified.

If the factory is engaged in manufacturing some article of which the designer or drafting room can specify, before work on it is started, all the material needed to the minutest detail and make a complete list of it the budget system can be made to work well. Figures 47 and 48 show forms used for making the budget, or list of materials in a number of machines or articles to be manufactured. A copy of this is sent to the storekeeper, and as the material is taken out it is signed for in the space indicated. When all the material is delivered, the bill of material is sent to the cost department. This method simplifies the work of the cost department because the value of the material can be figured out on the material sheet itself in one lump sum and there will not be a lot of small requisitions to deal with. It is a better check on the shop, because if more material is called for there must have been loss or waste, which can then be investigated.

The advantages of this method will be lost if the scheme is not rigidly adhered to, and if it is rigidly followed it will be found arbitrary, inelastic, and slow in any emergency. The material also should be all drawn from stores within a reasonable time; if not, the sheet will be in use in the storekeeper's hands for such a long time as to become illegible or probably lost.

BILL OF MATERIAL

FOR_____ DATE_____

ORDER NO._____ DRAW'G NO._____ DEP'T NO._____ SHEET NO._____

Item No.	No. of Pieces	Name of Part	Material	Drawing No.	Pattern No.	Received by	Issued by	Date Issued	Price	Amount	

FIGURE NO. 48.—Material budget alternate form to Figure No. 47. Size 8 x 8 inches.

Stores Accounts

It has been explained in what manner the material goes into and out of the stores, and it is absolutely essential that an exact record should be kept of these incomings and outgoings. Theoretically a storekeeper's account should balance as accurately as a cashbook does with the cash on hand, but this is never the case. It is remarkable, however, how closely the records tally with physical counts in well-kept stores. Well arranged and lighted buildings with honest and intelligent help are all conducive towards this end. There is nothing complicated or intricate in stores accounting, but care and accuracy are essential as in every other form of bookkeeping. With these characteristics the work will be found comparatively easy for any man with only a rudimentary knowledge of accounting.

The whole scheme of stores accounting centers around the perpetual inventory (see Figure 49). It is the ledger of the system, carrying accounts with each description of material or supplies kept in stock, with debit and credit columns arranged so that a balance can be readily calculated. The location of the article should be given; this corresponds to the address of a customer in the sales ledger, and the amount of credit he is entitled to is comparable to the maximum stock permitted. The illustration of a perpetual inventory shown in Figure 49 is arranged for recording quantities only, which is all the majority of stores are required to do. Some storekeepers have to record values and quantities, but these are exceptional cases. The cost accounting department

Article	Location	Max.	Verified	Sheet No.
	Shelf No.			
	Bin No.	Min.		

Ordered			Received			Issued				Issued			
Date	Order No.	Quantity	Date	Order No.	Quantity	Date	Req. No.	Quantity	Balance	Date	Req. No.	Quantity	Balance

Figure No. 49.—Perpetual inventory. The Stores Ledger. Loose Leaf Sheets. Size as required.

usually takes care of the values, but there may be reasons why they should be kept in both departments, in which case the perpetual inventory would have to be arranged accordingly. See Figure 50 for this form.

On receipt of anything into the storeroom, the proper entries must be made on the perpetual inventory. This will be done from material-received reports, credit requisitions for material returned from shop, or any other forms used to indicate receipt of articles. All of these documents, before being posted or entered on the perpetual inventory, will of course have been checked and it must be known that the material is actually in the stores. In this respect they are synonymous with invoices, which would not be accepted as correct and entered in the ledger until checked; similarly the material-received sheets, etc., must be absolutely correct before being entered in the perpetual inventory. If a copy of the material-received report has been sent to the accounting department, the stores copy can be filed away for reference. The memorandums received from the shop with materials to be credited must be sent to the accountants to enable them to check with copies received from foremen, and make the proper credits to production orders.

Nothing should be permitted to leave the stores without a voucher to show for it. These consist of the requisitions, which must be entered on the perpetual inventory and promptly sent to the accountant's department. It is absolutely essential that these entries of articles, both into and out of stores, are correctly and accurately recorded, otherwise the whole object of the scheme will be defeated.

ARTICLE	MAXIMUM	VERIFICATION DATES	SHEET No.
LOCATION	MINIMUM		
UNIT			

ORDERS PLACED			RECEIVED							ISSUED							BALANCE
DATE	ORDER No.	QUANTITY	DATE	ORDER No.	QUANTITY	WEIGHT	PRICE	AMOUNT		DATE	ORDER No.	QUANTITY	WEIGHT	PRICE	AMOUNT		QUANTITY

FIGURE No. 50.—Perpetual inventory or stores ledger arranged to show both quantity and value.

Periodical verifications should be made by actual physical count or weighing. It is not sufficient to do

O

BIN TICKET

Bin No._____

Location_____

Material_____

Drawing No._____

Pattern No._____

Size_____

Send this ticket to storekeeper when only_____remain in bin, and replace it with temporary ticket.

Date	In	Received or Issued by	Out	Balance

Figure No. 51.—Storeroom bin ticket. Size 3 x 7 inches.

this only when a general inventory is taken. How often it should be done depends on the nature of the stock. It is not necessary to verify every item at one time; the stores can be divided into sections, and the work of checking done when it will not disturb the general routine work going on. When there is an opportunity, which comes frequently in almost every storeroom, the help should be set to counting or weighing articles or materials and when verified notification should be made on the perpetual inventory. By this means the whole stores should be covered every two or three months, which will probably be found often enough. No disturbance or dislocation of regular work will occur and anything wrong will be discovered promptly. The storekeeper will have the satisfaction of knowing that his stores and accounts are in good and reliable shape.

Stores Tickler System

In making entries on the perpetual inventory, close watch should be kept of balance to see how near it is to minimum. The stock man taking articles from bins can also watch this and notify the chief storekeeper by means of tickets (see Figures 51 and 52). One is the regular ticket, Figure 51, which is detached from its hook and sent to the storekeeper when minimum is reached. In its place the stock man hangs the temporary ticket, Figure 52, which should be a different color. This remains there until additional articles are received to bring quantity above minimum. The regular ticket is returned by the storekeeper when an order has been placed, and both it and the temporary ticket remain together until goods are received. This

indicates to the stock man that both he and the chief storekeeper have given the matter attention.

O

TEMPORARY TICKET

When only _____ is left in bin, send regular ticket to storekeeper and put this in its place. When regular ticket is returned, hang both of them together until stock is above min., after which remove this ticket.

Bin No. _____

Location _____

Material _____

Drawing No. _____

Pattern No. _____

Size _____

Date	In	Received or Issued by	Out	Balance

Figure No. 52.—Temporary ticket for storeroom bins. Same size as Figure No. 51, but contrasting color.

In previous chapters special emphasis has been placed on the desirability of keeping the amount of stores on hand at the minimum. There are important economic reasons for this. To maintain the stores at the minimum and at the same time maintain an ample factor of safety in so far as supplying the requirements of the factory are concerned means that the stores tickler system should provide proper guaranties and safeguards to protect this factor of safety. Therefore it should be rigidly kept up.

In some stores regular bin tickets are not used and a simpler form of tickler ticket can be adopted (see Figures 53 and 54). In this case the minimum will be marked on bin, and when it is reached the stock man sends the first ticket to the chief storekeeper who makes requisition on the purchasing agent and returns

O

BIN NO._____

MATERIAL_____

Min. reached and ticket sent to storekeeper.

DATE_____

_____

Stockman

Requisition sent to purchasing agent.

DATE_____

_____

Storekeeper

FIGURE No. 53.—Tickler ticket for storeroom bins about 2x3 inches.

ticket to the bin. The second ticket is then sent to the chief storekeeper, who retains it until he receives copy of purchase order, when it is returned to bin. The reason for using the second ticket is that it proves a sure check on both storekeeper and purchasing agent. The storekeeper on receipt of first ticket makes a requisition, but if it is mislaid or not acted on by the purchasing agent, the second ticket brings it to his attention. The stock man at the bin would also have his attention drawn to the failure to order a new supply if the second ticket did not come back. These tickets should be in contrasting colors.

Scrap

All scrap should be sent to the storekeeper, who should weigh it and arrange a place in his storeroom for such of it as requires to be kept locked up.

O

BIN NO._____

MATERIAL_____

Requisition notice received.

_____

Stockman

Order placed by purchasing agent.

DATE_____

_____

Storekeeper

FIGURE No. 54.—Tickler ticket for stock room bins. Same size as No. 53, but different color.

He should advise purchasing agent on a form similar to Figure 56. The purchasing agent will make a sale when he sees a favorable market, and the scrap will then be delivered to the shipping clerk.

Fixing the Maximum and Minimum

In some plants the storekeeper does not make requisitions on the purchasing agent to buy material, but instead sends him a report that stock has reached the minimum (see Figure 55). In this case the purchasing agent would decide from his records what quantity to order and the date delivery would be required. The whole question of fixing a minimum is a matter for careful consideration. To obtain the best economic results the stock should be kept at

REPORT OF LOW STOCK

To Purchasing Agent: Date_____

The Stock of the following have reached the minimum. } _____ Storekeeper.

MATERIAL	Minimum Allowed	Now in Stock	REMARKS
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Figure No. 55.—Report from storekeeper to purchasing agent that stock has reached the minimum. Size 4x6 inches.

lowest point consistent with safety, and to do this a study must be made of the rate of consumption, probable future rate, and estimated time required for delivery.

If there is no material budget, the storekeeper will probably receive copies of production orders, which he can check with stock he has on hand, as he should know the quantities of material needed for these orders, and will then be able to requisition what is

DATE_____

TO THE PURCHASING AGENT,

There has been received into Storeroom_____ of_____ Scrap. The total quantity now on hand awaiting your instructions for disposal is_____

_____

Storekeeper.

FIGURE NO. 56.—Report from storekeeper to purchasing agent that scrap has been received. Size 4x6 inches.

required to execute the orders as they progress through the shop.

Before leaving the stores question another word or two about maximum and minimum is not out of place. Take the simpler proposition of supplies first. The records kept in the purchasing office will determine the exact quantities used in a given period and any intelligent person can fix the high and low with the above mentioned records as a basis and also taking into consideration the most economical quantities to buy in the matter of price, freight charges, etc.

The maximum and minimum on materials are more

difficult to determine owing to the fluctuations in business and the changes in styles of articles manufactured and methods of fabricating. There are no insuperable difficulties if the sales manager, production manager, and purchasing agent get together.

The first man can estimate approximate sales, the second man can tell what shop changes are likely to take place, and the third man knows what quantities he can buy to most economical advantage. Time is an important factor to be considered. The necessary time to make the sales, to manufacture the articles, and to obtain delivery of raw material. Fix the maximum of raw material low on articles likely to go out of fashion, however attractive a purchase may look. On standard manufactured products with a steady and regular sale the proposition is simple. On other goods sound judgment and common-sense will determine the question. The economic benefits and advantages have been discussed before. Overbuying and underbuying are both very expensive things to indulge in. Steering the right course in any business operation is a most valuable factor and in the function of purchasing it is pre-eminently so.

CHAPTER XII

Purchasing for Railroad Construction Work

WHEN the writer was appointed purchasing agent for the Underground Electric Railways of London, England, he had to inaugurate a system which would be sufficiently comprehensive to carry out the functions of the department as required by the directors, and which at the same time, owing to the character of the construction work, would be as simple as possible. An understanding of the stupendous nature of the enterprise can be formed from the fact that the expenditure for materials, equipment, and supplies exceeded the sum of $30,000,000. A better cognition of this can be gathered from what the construction work covered, also a better perception of what the purchasing of such a vast amount implied.

The undertaking comprised the construction of three new tube railways, the electrification of the old underground steam railroad, the construction of a central generating station and twenty-two transformer stations, over fifty new passenger stations, and the rebuilding of some of the old ones. It also included the erection of four car sheds with shops containing machinery and tools for assembling and equipping the cars, and for their repair and maintenance when in operation.

The work was all carried out within a radius of twelve miles from the head office, where the chief

engineer and purchasing agent were located. Owing to the circumscribed area in which the work was executed, it was possible to be in almost daily contact with the engineers who had charge of the various descriptions of construction, such as track work, car equipment, generating station, automatic signaling equipment, etc.

The magnitude of the enterprise involved the purchase of enormous quantities of material, but to a certain extent this was simplified by the absence of some of the details usually associated with the work of a purchasing agent's office, and described in earlier chapters. In a manufacturing establishment it is necessary to keep some exact and minute records which are not essential to such work as this, where the stores are usually temporary and merely serve as a place where material can be protected until used, and few stores records are kept.

The requisitions were based on estimated quantities required, and orders were placed accordingly with stipulations as to deliveries, which corresponded as closely as possible to the progress of the work, and compatible with the nature of the material, its liability to deterioration and perishable character.

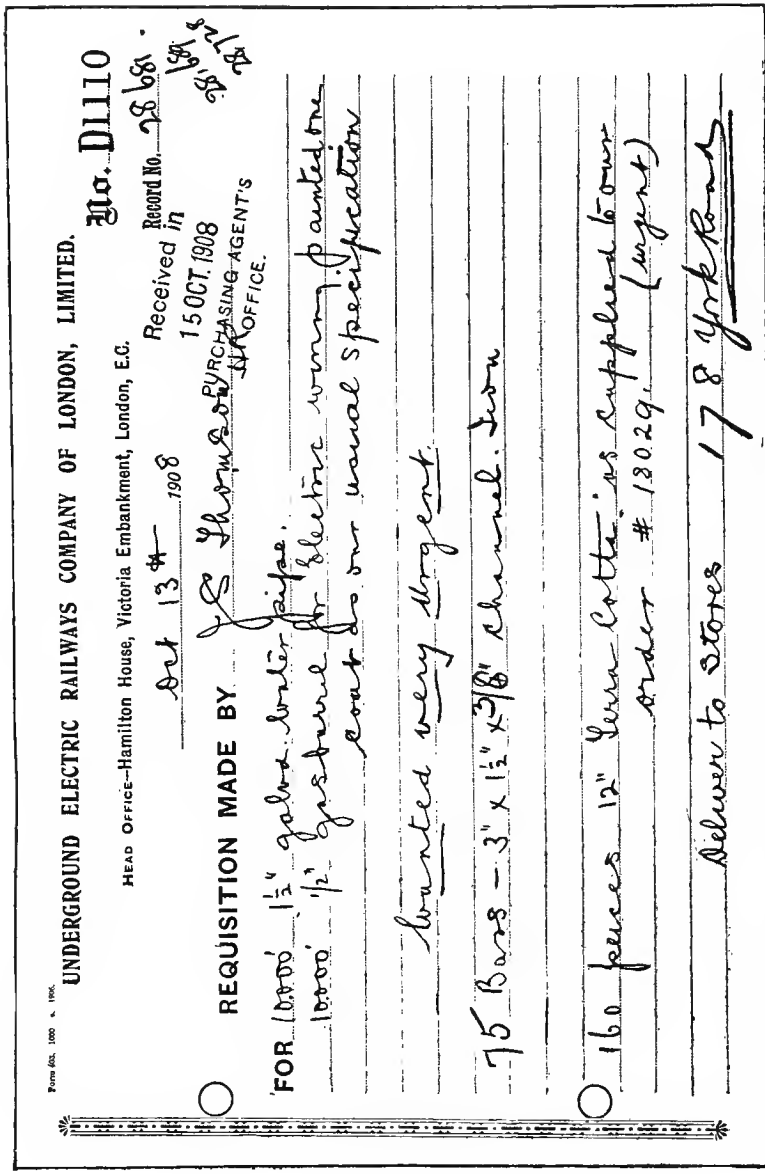
These requisitions came into the purchasing department in a continual stream, and covered an almost unprecedented variety of materials and supplies required for the execution of the work. They included such things as steel rails, high and low tension cables, cement, special and unusual descriptions of lumber, electric light fittings, self-winding clocks, all kinds of equipment for cars, car barns, and stations down to the almost infinitesimal things in

the way of supplies necessary in carrying out such work.

The system adopted for making these purchases comprehended the use of as few forms as possible, but at the same time it was essential that the records should be reliable, easily accessible, and kept in compact and concise form.

The engineer in charge of each division of the work was authorized to sign requisitions and was furnished with a book of them, the color system being adopted to facilitate filing. They were further distinguished by being in alphabetical series so that each engineer knew his serial letter and color. This served several good purposes, as all requisitions for each division were filed together in one binder, which could be picked out without hesitation by its color as belonging to generating station work, track work, car sheds, etc. When the order was issued, the requisition number appeared on it, and the order number was inserted on requisition. Thus any requisition could be found at a moment's notice by referring to the order or the order found by referring to the requisition.

The usual method of procedure was followed in dealing with the requisition. In those cases where prices had been established, orders were issued immediately the examination of the requisition showed it was properly validated and in good order. When the material was special, the usual requests for quotations had to be sent out, received, and compared before placing order. Owing to the nature of the work, the variety of material demanded by the engineers was astonishing. Requisitions came in fre-



Form 603. 1000 4. 1906.

UNDERGROUND ELECTRIC RAILWAYS COMPANY OF LONDON, LIMITED.

HEAD OFFICE—Hamilton House, Victoria Embankment, London, E.C.

No. D1110

Oct 13th 1908

Received in 15 OCT. 1908 PURCHASING AGENT'S OFFICE.

Record No. 28681. 28,681 28728

REQUISITION MADE BY J S Thomson

FOR 10000' 1½" galvd. water pipe.
10000' ½" gasbarrel for electric wiring painted one coat as our usual specification

Wanted very urgent.

75 Bars – 3" x 1½" x 3/8" channel. Iron

160 pieces 12" Terra Cotta as supplied to our order # 18029. (urgent)

Deliver to Stores 178 York Road

FIGURE No. 57.—An original requisition showing the manner in which they came into purchasing office.

Form 140. 1,000—3-08

UNDERGROUND ELECTRIC RAILWAYS COMPANY OF LONDON, LIMITED.

No. J1823

HEAD OFFICE—Hamilton House, Victoria Embankment, London, E.C.

Record No. 24,898.

May 1st 1908

REQUISITION MADE BY Gen. Mgrs. Office (Zed)

FOR U (Common Vacuum Pipe Chelsea Gen. Sta) laps welded 10" pipe as per blue print L-21 except as below to be ~~seamless hot drawn~~ steel tubing 5/16" thick with wrot steel flanges screwed on and expanded except where specified to be screwed only. All flanges to be faced and drilled as shown and coated with white lead & tallow body of pipe to be painted one coat red lead & oil.

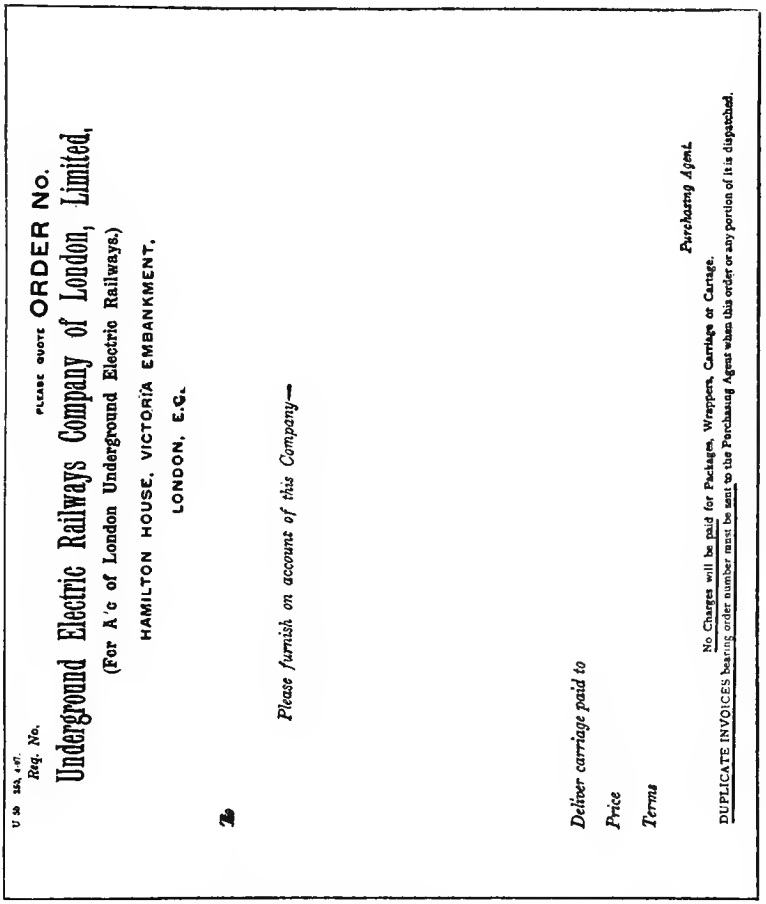
Deliver Chelsea
Z.E.K. J.W.T.

Note the lengths of two following pipes are changed from dimensions stated on blue print
V-9 stated as 12. 5 1/8 change to 10 11 1/4
V. 11 " " 12. 10 3/4 " " 11 4 3/4

O.K.C.

FIGURE No. 58.—Another requisition for a different class of work and therefore a different color and series.

quently for something entirely distinct from anything purchased before. This necessitated searching the market for sources of supply to meet these new de-



U 50 253, 4-97.

Req. No.

PLEASE QUOTE ORDER No.

Underground Electric Railways Company of London, Limited,

(For A/c of London Underground Electric Railways.)

HAMILTON HOUSE, VICTORIA EMBANKMENT,

LONDON, E.C.

To

Please furnish on account of this Company—

Deliver carriage paid to

Price

Terms

Purchasing Agent.

No Charges will be paid for Packages, Wrappers, Carriage or Cartage.

DUPLICATE INVOICES bearing order number must be sent to the Purchasing Agent when this order or any portion of it is dispatched.

FIGURE No. 59.—Purchasing agent's order form. Frequently over 100 of these were issued in a day owing to the rush of requisitions which came into the office during the height of construction work.

mands. It did not matter how exhaustive the records were in the office, or how diligently they were kept up, it was found that information was lacking regarding something not commonly called for. It was found

also that the market for those goods which were being bought regularly could be broadened and improved by keeping continually at it. This was owing to the changes in manufacturing methods and in firms who started making a new line of goods and many other causes. It goes to show that there is no finality to the acquirement of this class of information.

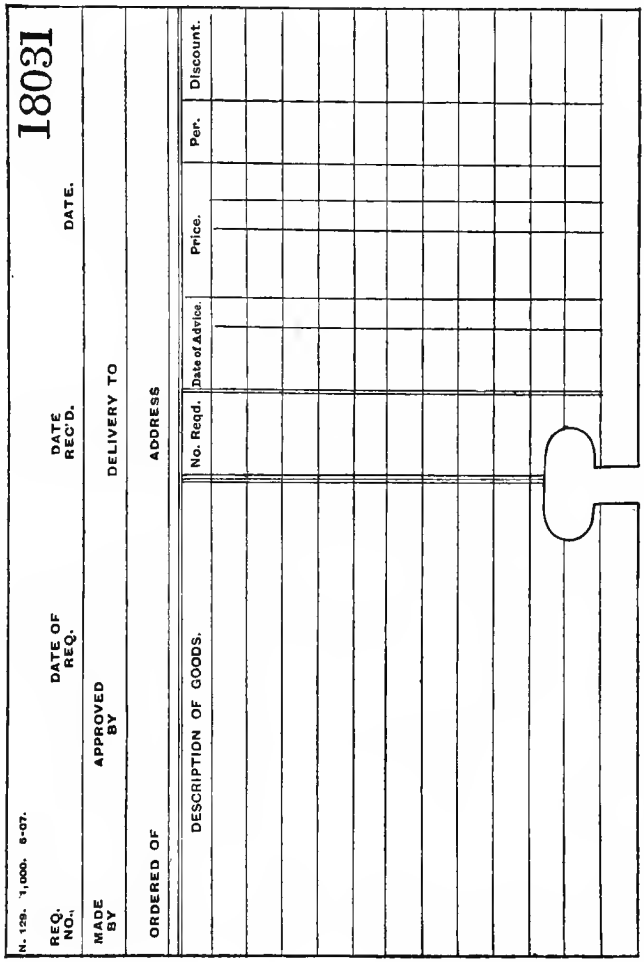
There were some unusual features connected with the order which deserve explanation. The directors required copies of all orders kept in the office by the press copying method. The reasons for this were partly legal and are not necessary to explain here. It seemed a cumbersome method as a carbon copy had to be sent to the engineer who made the requisition, and it would have been quite easy to make another one for use in the purchasing agent's office.

Having the impression copy, a carbon was not necessary for the scheme adopted, which worked out admirably, and when the construction work was completed the records of nearly 40,000 orders involving an expenditure of over $30,000,000 were all contained in a small filing cabinet less than four feet wide and five feet high.

Referring to the order form above, Figure 59, this is exceedingly simple in its wording, many clauses which usually appear being absent because every purchase made in Great Britain was on the basis of freight being paid by the consignor. An English freight rate includes collection from the consignor's premises and delivery to consignee's premises, so we had no teaming or traffic problems to deal with, and the freight being paid by the shipper, he specified the

route, unless there was some exceptional circumstance connected with the shipment.

Immediately this order was sent out a card was


N. 129. 1,000. 6-07.

18031

REQ. NO.

DATE OF REQ.

DATE REC'D.

DATE.

MADE BY

APPROVED BY

DELIVERY TO

ORDERED OF

ADDRESS

DESCRIPTION OF GOODS.	No. Reqd.	Date of Advice.	Price.	Per.	Discount.

FIGURE No. 60.—Record Card, size 4 x 6 inches on which was recorded a synopsis of the history of requisition and order.

made out (see Figure 60). This card bore in the right-hand top corner the same number as the order, and

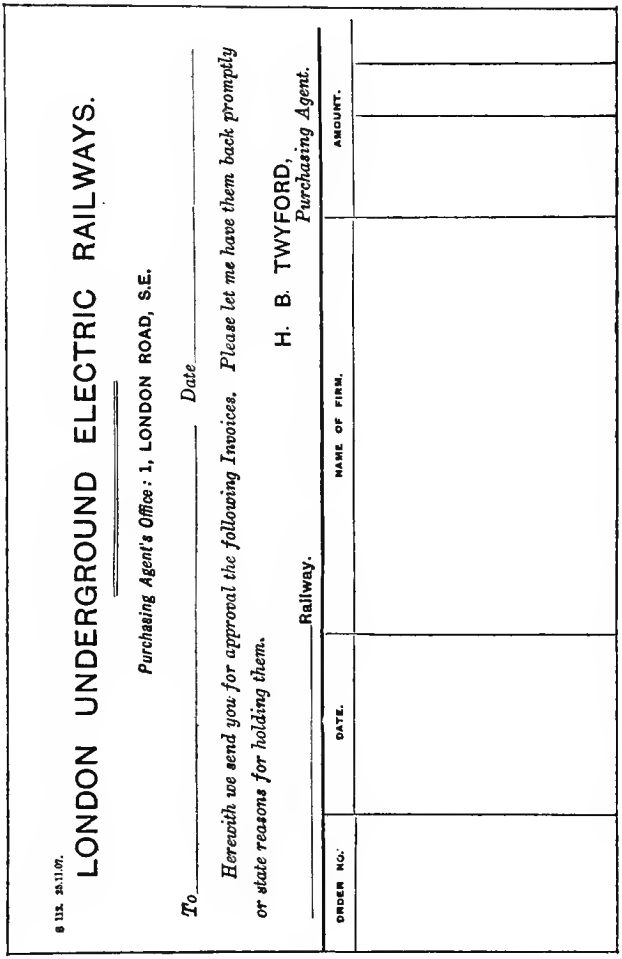
in fact contained all the particulars of the order in an abbreviated form. On it were also recorded the quo-

Date	Number or Quantity Delivered	Amount of Invoice	Date sent out	Checked in by	Passed for Payment

FIGURE No. 61.—This is the reverse side of card shown in Figure No. 60, and on it were recorded the invoices, completing the history of the transaction.

tations received. This was called the record card because on it was recorded a synopsis of the whole transaction including particulars of the requisition

condensed, enough information regarding the order for ordinary reference, a summary of quotations re-



S 113. 25.11.07.

LONDON UNDERGROUND ELECTRIC RAILWAYS.

Purchasing Agent's Office: 1, LONDON ROAD, S.E.

To _____ *Date* _____

Herewith we send you for approval the following Invoices. Please let me have them back promptly or state reasons for holding them.

H. B. TWYFORD,
Purchasing Agent.

_____ Railway.

ORDER NO.	DATE.	NAME OF FIRM.	AMOUNT.

FIGURE No. 62.—Notice accompanying invoices sent out for approval.

ceived, date of advice of shipment, and finally a complete list of the invoices (Figure 61).

These invoices were recorded on the reverse side

U. 78. 250. 5-07.

130

RECORD OF SALES.

MATERIAL

RAILWAY

SOLD TO

DATE

AUTHORIZED BY

TENDERS INVITED FROM	PRICE	PER	AMOUNT	REMARKS

FIGURE No. 63.—Card for recording sales of scrap, old equipment, and tools.

of this card (see Figure 61), including date sent out for approval, date checked, and when finally approved and passed for payment. Where an order was for a large number of articles, such as 10,000 malleable iron castings, it was possible for so many shipments to be made that one card would not contain a record of all the invoices, in which case an additional card was inserted, spares being kept for this purpose. Such cases were rare, however, and applied principally to such things as air compressors, motors, etc., which were ordered in large quantities and delivered a few at a time, as required during progress of the work.

The regulations of the company called for the approval of the invoices on their face by the engineer in charge of the particular work where the material was used, and also by the purchasing agent. When an invoice was received in the purchasing agent's office it was checked with the order, recorded on the card, Figure 61, and sent at once to the engineer who drew the requisition accompanied by a notice as illustrated in Figure 62. It was approved by him for quality and quantity, and returned to the purchasing agent, who approved it for price, terms, etc. If material had been inspected, inspection reports were checked with invoices which were finally passed to accountant.

This is briefly the manner in which the purchases were effected and the records of them kept for this vast enterprise. In a small filing cabinet a succinct history could be obtained of nearly 40,000 transactions. An index of the orders was of course kept both under the supplier's name and name of material. The requisitions were filed in loose-leaf post binders,

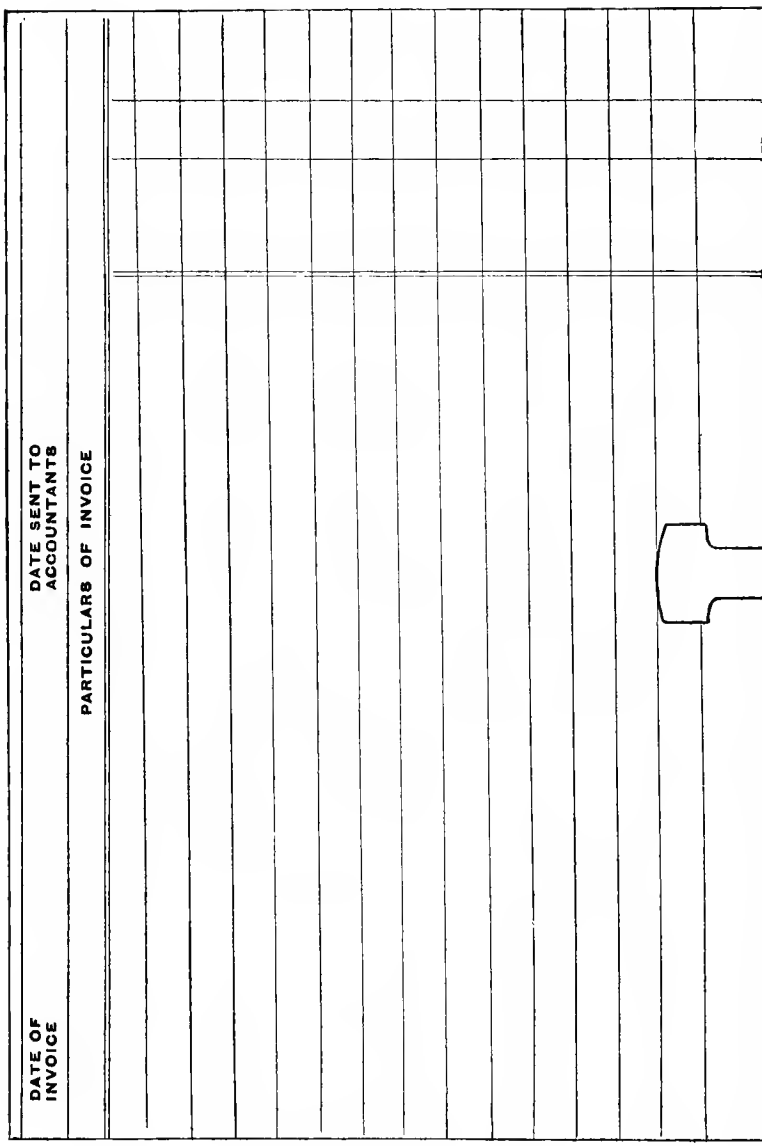


FIGURE No. 64.—This is reverse side of card shown in Figure No. 63, and indicates how invoice for scrap was recorded.

the posts being arranged to take exactly 1000 requisitions. If at any time complete information as to wording of requisition or order was required or the cards did not give enough details, the copy of order and original requisition could be referred to without the slightest delay. There was a tickler system maintained on similar lines to the one described in an earlier part of this book.

During the progress of the work, scrap accumulated and had to be sold, one of the principal items being copper; also, as the work neared completion, portions of the equipment and tools used in construction were disposed of through the purchasing department. A record of these sales was kept on a card (see Figure 63), the reverse side recording particulars of material and date invoiced by accountants.

Purchasing for Operation

As portions of the work were completed, the construction company operated trains on those sections and also operated the generating station. This necessitated a modification in the form of the requisitions and orders as they covered requirements for the permanent stores at the car shops and generating station. The inauguration of a system was therefore essential to take care of these functions until the completed undertaking was taken over by the operating staff. The coal for the power house was the most important purchase effected at the commencement of the operating work.

The generating station at that time consumed approximately 300 tons of coal per day, which had to be supplied in regular quantities at short intervals

owing to the limited storage capacity and the character of the coal itself.

It was found that a screened and washed coal of a certain size with a restricted range in B. T. U.'s gave the most economical results on the automatic stokers, and any deviation from the size or heat units of the coal selected as most suitable seriously affected its calorific value during consumption, and correspondingly affected the output of the generating station.

A specification was drawn embodying the desirable features required in the coal. The size was specified by naming the mesh of a screen it would pass over and through. The allowable range in B. T. U.'s was specified, and the maximum percentage of ash, sulphur, and foreign substances. To obtain sufficient coal of this character it was necessary to visit many collieries and inspect their screening and washing arrangements. Samples were obtained and subjected to analyses in our own laboratory.

On the strength of these analyses the orders were placed. It looked a fairly simple proposition to buy such coal, but it was far from being that. There was no physical connection at the generating station with any railroad and all coal had to be lightered up the river after being brought from the north of England and Scotland in coasting steamers. As a result of this, the coal was handled four times after being screened at the pit mouth, causing breakage and an excessive amount of dust. Different grades and coal from widely separated mines could be mixed in one barge when steamers were discharged in the river. The discrepancies in weights as given by the colliery, by the steamship owner, and as loaded on

the barges and as finally weighed on arrival at the generating station were beyond understanding.

To overcome these disagreeable features it was

Name					
Description					
District					
Shipping Port					
Analysis	Date	Date	Date	Date	Date
Moisture					
Volatile Matter					
Fixed Carbon					
Sulphur					
Ash					
B.T.U. Litharge Method					
Remarks					

THE GLOBE-WERNICKE CO. LTD. LONDON

FIGURE No. 65.—Card for recording analyses of coals offered. A good idea of the real value could be obtained from the average of several analyses than from a single one, the sample for which might have been improperly selected.

finally stipulated that the only weights recognized would be those registered by our own automatic scales when discharging barges at the generating station, and

the only analytical tests as a basis for payment would be those made of samples taken from barges while being unloaded. The breakage and dust could not

Date	Offered by	Quantity	Price

FIGURE No. 66.—Method of recording quantities available and prices of coal offered.

be altogether overcome, but by insisting on more careful and better methods of handling, this was considerably reduced.

Form 658. 2,000. 1-07.

UNDERGROUND ELECTRIC RAILWAYS COMPANY OF LONDON, LTD.

OFFICE OF THE PURCHASING AGENT,
HAMILTON HOUSE, VICTORIA EMBANKMENT, E.C.

TO

DATE.....

We have discharged the following Barges at Chelsea Generating Station, please render to this office at once an invoice in duplicate for the coal.

Name of Barge.	Date unloaded.	Quantity.

FIGURE No. 67.—Form used for advising sellers of the actual weight of coal received. This weight was registered automatically during the passage of the coal from the barge to the storage bunkers at the top of the generating station.

A record was kept of the analyses of all coals offered, as shown in Figure 65. On the reverse side of this card were entered the name of the firm offering

B (10/500-6-14)

METROPOLITAN DISTRICT RAILWAY.—Requisition on Purchasing Agent No C 5250

To the Purchasing Agent. *Date* _____ *191*__

Please furnish the following for the *Official Order No.* _____ *Date* _____ *191*__

No. of Last Order _____ *191*__

_____ *Stores.* *Delivery within* _____

Quantity Required	Article.	Purpose Required

Approved _____ *date* _____ *19*__

Head of Department. *Signed.*

Approved _____ *date* _____ *19*__

Managing Director _____ *Storekeeper*

FIGURE No. 68.—Requisition for materials and supplies and, when approved, forms the purchasing agent's authority for making a purchase.

the coal, quantity available, and other particulars as shown in Figure 66. Owing to the difficulties experienced in obtaining the requisite quantity of coal of the most desirable grade and size a large number of offerings had to be examined and analyzed.

Figure 67 represents the method of advising shippers of the weight of coal discharged from barges as recorded by our own scales.

The following are some of the principal forms used in operation work, and from the description of the undertaking in the preceding pages the character of

Form No. 181. (N.—3-14.)

ENQUIRY.

NUMBER.

From

London Electric Railway,

Office of the Purchasing Agent.

ELECTRIC RAILWAY HOUSE,
BROADWAY,
WESTMINSTER, S.W.

Telephone Victoria 6800.
Telegrams "Underneath, Vic., London

To

PLEASE QUOTE immediately on this form, which kindly return to the above address, your lowest price, subject to 2½ settlement discount, monthly account, for our requirements as under, delivered to

CARRIAGE AND PACKING FREE,

or returnable at Vendor's Expense, giving earliest delivery date.

ARTHUR CHURCHILL,
Purchasing Agent.

W. & R. Ltd.

Quantity.	Description.	Quotation.	Delivery.	
			Part in	Complete by

The consideration of your tender is likely to be prejudiced unless an early and guaranteed delivery date is stated, and we reserve the right to cancel any balance which may remain undelivered on that date.

We, the undersigned, hereby offer to supply The London Electric Railway with the above goods on the terms hereon named.

Date _____ *Signed* _____

FIGURE No. 69.—Form of inquiry used in obtaining quotations.

the purchases and what they implied can be gathered without detailing the processes which each passed through. The legend accompanying each illustration describes briefly the form and its uses.

Form No. 1. (25/100—9-14).

Req. No......

LONDON ELECTRIC RAILWAY.

Order No. 10655

ARTHUR CHURCHILL,
PURCHASING AGENT

TELEGRAMS: UNDERHEATH, VIC. LONDON.
TELEPHONE: VICTORIA 6800 (PYTE: SIX: EL.)

OFFICE OF THE PURCHASING AGENT,
ELECTRIC RAILWAY HOUSE,
BROADWAY, WESTMINSTER,
LONDON, S.W.

To

Please supply on account of this Company:—

1 ALL GOODS TO BE DELIVERED

TO

complete, on or before

2 A detailed priced invoice in duplicate, bearing order number, to be rendered immediately on despatch of the goods, to the Purchasing Agent, Electric Railway House, Broadway, Westminster, S.W.

3. All patterns must be returned on completion of order.

4. Accounts paid monthly less 2½%.

5. If you accept this order (see conditions on back) please sign and return the annexed form.

EXAMINED

PURCHASING AGENT.

L. E. R.
Order No. 10655

FIGURE No. 70.—Official order form. Used in quadruplicate, the original going to supplier, one copy being kept in the purchasing department, one going to the storekeeper, and one to the department making the requisition.

683(N. 11-14)

Name of Article

Date	Order No.	Co.	Purchased from	Price per	Terms	DELIVERIES					£	s	d.
						No.	Tons	Cwts	Qrs.	Lbs.			

Figure No. 71.—General record of orders placed, tabulated under the name of each article or material giving prices and quantities.

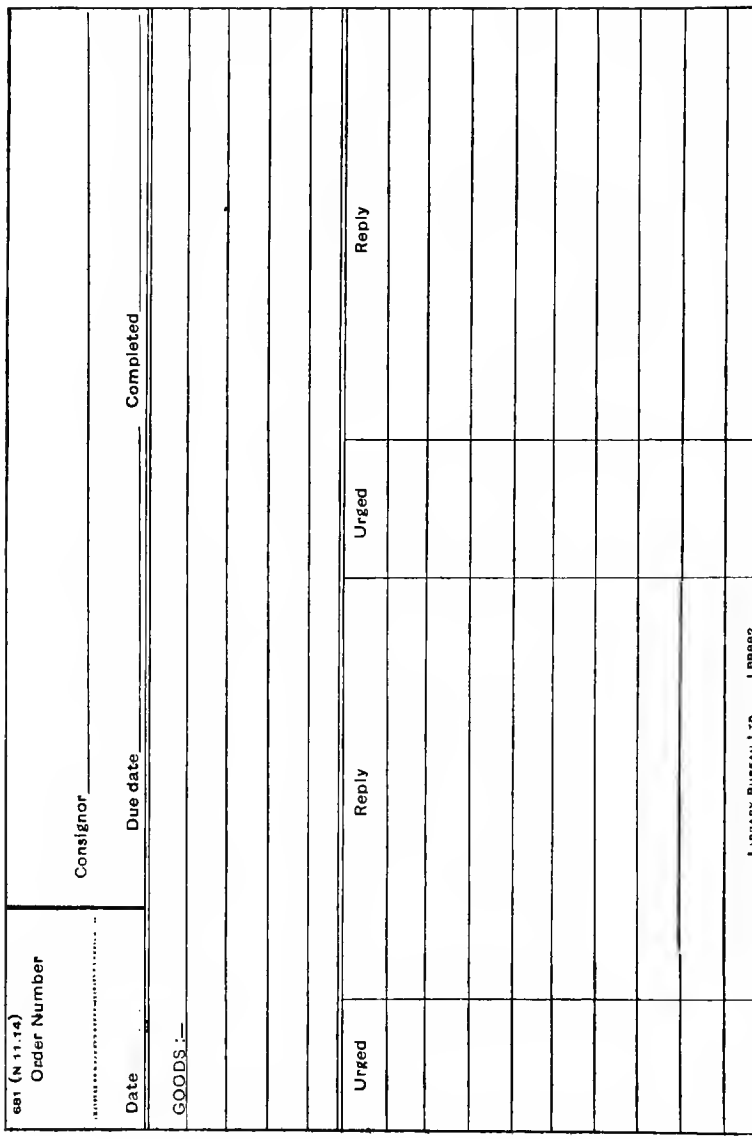


FIGURE No. 72.—Tickler card, or as it is called in England, "urge card."

Deliveries	Date	Invoiced	Remarks

FIGURE No. 73.—Reverse side of "urge card" for recording shipments.

(Form No. 184. (J. 10-14.)

LONDON ELECTRIC RAILWAY COMPANY.

Office of the Purchasing Agent:
ELECTRIC RAILWAY HOUSE, BROADWAY, WESTMINSTER, S.W.

(W. & S. Ltd.)

Date.....

To .....

.....

.....

ORDER No......

DESCRIPTION.....

Please note delivery of the above is now due. I shall be pleased to know the exact position by return of post.

Kindly reply on this form.

ARTHUR CHURCHILL,
Purchasing Agent.

REPLY.

FIGURE No. 74.—Reminder card. The purpose of this form is obvious.

Form No. 440. (100/100—11/14)

LONDON ELECTRIC RAILWAY COMPANY. No. C 20700

STORES REQUISITION AND RECEIPT.

Storekeeper's Copy.

Materials Supplied ex _____ Stores.

TO STOREKEEPER, GENERAL STORES.

Please Supply _____ Department with the undermentioned:—

Date.	ARTICLE.	No. or Quantity.	Weight. Tons.	cwts.	qrs.	lbs.	Received.	E/S.	Purpose.	Company.	Account No.
							Date received				
							Signature				

[W. & S. Ltd.]

Approved by _____ *Requisitioned by* _____ *Date* _____ 19 ....

FIGURE No. 75.—Requisition on general storekeeper. The original is retained by the storekeeper, one copy is sent to the accountant, and a copy is kept by the department requisitioning the goods.

Form No. 472 (24/50—12-13). [W. & S. Ltd.]

LONDON ELECTRIC RAILWAY.

RETURNS DISPATCH NOTE.

For Storekeeper's Stamp

No. 1550

Storekeeper's Copy.

To Storekeeper, General Stores,

Please Receive from _____ Department the undermentioned and credit account named:—

ARTICLE	No. or Quantity	Weight				Received			Originally Charged	
		Tons	cwts.	qrs.	lbs.		Date received	Signature	Purpose	Account No.

Sent by _____ _____ *Date* _____ 19____

FIGURE No. 76.—This form is in triplicate similar to Figure No. 75 and is used when goods are returned to the storekeeper. Copies are disposed of in the same manner as Figure No. 75.

LONDON ELECTRIC RAILWAY COMPANY.

2900

Goods Received at __________ Stores __________ 191

Packages No.	Carrier.	Order No.	Consignor.	QUANTITY.				DESCRIPTION	INVOICE.		Price.	Cost.	Stores Amount Folio.	Remarks.
				No.	Weight. Cwt.	Qrs.	lbs.		Dated.	Sent H.O				

__________ Storekeeper.

FIGURE No. 77.—Form used for listing goods received at stores. A copy of this goes to accountant.

Form No. 546. (K. 11-14.)

Maximum Description Minimum

Date.	Quantity Received.	Date.	Quantity Issued.	Date.	Quantity Issued.	Date.	Quantity Issued.	Date.	Quantity Issued.	Date.	Quantity Issued.

FIGURE No. 78.—Bin card used in storeroom.

CHAPTER XIII

Purchasing for a Manufacturing and Construction Company

AN entirely different proposition in purchasing from that presented in the last chapter is involved in buying materials and supplies for a large corporation manufacturing elevators, escalators, mine hoisting machinery, etc., with factories located in widely separated parts of the country. The product of these factories finds its way into every civilized country in the world, besides having an enormous domestic demand which is disposed of through offices situated in over eighty of the principal cities.

The business of the undertaking comprehends not only the manufacturing of machines and apparatus, but also the erection of them, and the construction of the appurtenances necessary for their complete installation.

A service department is also maintained which comprises the work of inspection, repair, upkeep, and maintenance of elevators already erected, and the furnishing of necessary supplies. It undertakes the reconstruction of old and partially obsolete installations, to bring them into conformation with the latest developments. The constant additions which are being made to the building laws in cities and the various state requirements governing factory buildings add considerably to the functions of this department.

It can readily be conceived that the purchasing connected with the multitudinous activities of such a concern is a complex problem and one involving an enormous amount of detail. The writer's association

OTIS ELEVATOR COMPANY

REQ. NO _____

DATE _____ 191__

PURCHASING AGENT: PLEASE ISSUE ORDER FOR THE FOLLOWING FOR DELIVERY

TO _____ WORKS DEPARTMENT NO. _____

CHARGING EACH ITEM TO ACCOUNTS INDICATED IN MARGIN

CHARGE TO ACCOUNT NO. CLASS

ORIGINAL

DATE WANTED _____

SHIP VIA _____

TO BE USED FOR _____

MAX. _____ MIN. _____ ORDER _____

FIN. IN STOCK _____ FIN. ON ORDER _____

RGH. IN STOCK _____ RGH. ON ORDER _____

ASSEM. IN STOCK _____ TOTAL AVAILABLE _____

FIN. IN STOCK & REC'D SINCE _____ AMT. _____

AT PSESENT _____

NEEDED ON ORDERS _____ TOTAL USED _____

REMARKS _____

SIGNED _____ DEPT. _____

APPROVED _____ FOR MANUFACTURING DEPT. APPROVED _____ FOR WORKS

FORM 371

FIGURE No. 79.—Requisition from factories.

with this work is an interesting and pleasant experience and some of the methods used are related here and may be of service to the reader.

The operations of the company covering such a wide area naturally entail the complete separation of all traffic work from the purchasing, and it is a distinct and important department comprising many functions in no way connected with the purchasing department. In fact, its principal work is related to shipments made on account of the sales department. It cannot, therefore, be considered as an integral part of the purchasing activities. An illustration will be given in the next chapter where traffic work is confined practically to purchasing alone and forms a constituent part of that department.

The stores system is, similarly to the traffic work, segregated from the purchasing department and performs its important functions independently. The operations of this purchasing department therefore are confined to buying, and the methods employed are in contrast to the other examples given.

The requisitions from the factories are shown in Figure 79. This form is sufficiently clear and needs no explanation; the arrangement and wording convey to any person with only a rudimentary knowledge of what a requisition is, its import and meaning. It has to be properly authenticated by the parties in authority and when thus validated forms the purchasing agent's authority for placing the order.

Another form of requisition is shown in Figure 80. This is used by all the departments of the undertaking not connected with the actual manufacturing, for

supplies used by the construction and service departments and in the offices.

The purchase order, Figure 81, is in quadruplicate,

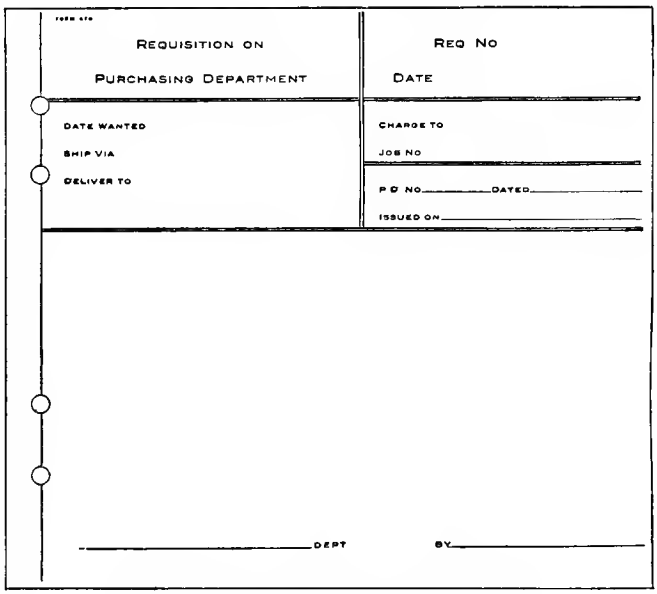

REQUISITION ON
PURCHASING DEPARTMENT
REQ NO
DATE
DATE WANTED
SHIP VIA
DELIVER TO
CHARGE TO
JOB NO
P O NO _____ DATED _____
ISSUED ON _____
_____ DEPT
BY _____

FIGURE No. 80.—Department requisition.

the original going to the seller, one copy being kept in the purchasing department, one going to the factory, and one to the receiving department. The copy retained in the purchasing office is filed in a post binder and on it are recorded the invoices. It should be mentioned that the copy going to the receiving department has on the reverse side an arrangement for recording the receipt of the goods (see Figure 82) and is retained in that department until the order is completed, when it is attached to the invoice. If more than one invoice is rendered against an order a supplementary

form is used for recording receipt of material which is attached to each invoice as they arrive. The final invoice completing the order is accompanied by the form shown in Figure No. 82.

ORIGINAL

OTIS ELEVATOR COMPANY
ELEVENTH AVENUE AND
TWENTY-SIXTH STREET

PUT THIS ORDER NO ON YOUR INVOICE B 55290

NEW YORK 191

Req. No | Dept

M

RENDER SEPARATE BILL FOR EACH ORDER

PLEASE DELIVER TO OTIS ELEVATOR COMPANY

SHIP VIA F. O. B.

PLEASE NOTE:

ACKNOWLEDGE AND ADVISE AT ONCE WHEN SHIPMENT WILL BE MADE.

OUR ORDER NUMBER MUST APPEAR ON ALL INVOICES, PACKAGES AND BILLS OF LADING AND THE PLACE TO WHICH MATERIAL HAS BEEN SHIPPED MUST BE STATED ON INVOICE.

SEND INVOICE TO THIS OFFICE, ATTACHING B/L THERETO.

WE WILL NOT IN ANY MANNER BE RESPONSIBLE FOR GOODS DELIVERED OR WORK DONE FOR OUR ACCOUNT WITHOUT A WRITTEN ORDER.

NO ALLOWANCE FOR BOXING OR CARTAGE.

OTIS ELEVATOR COMPANY,

FORM 1388
REVISED MAY 1, 1913

PURCHASING AGENT

FIGURE No. 81.—Purchase order.

Contracts are made for fixed periods by the purchasing agent in New York for all materials which can be bought to advantage in this manner. Purchase

NOTICE: A DETAILED REPORT OF THE GOODS MENTIONED ON THE OPPOSITE SIDE OF THIS SHEET MUST BE MADE IN THE SPACE BELOW. PARTIAL RECEIPTS SHOULD BE REPORTED ON FORM 4E3.

DATE	HOW DEL'D	QUANTITY	F.O.B. POINT	FREIGHT	CHARGED TO	CLASS	AMOUNT

RECEIVED BY_____

APPROVED_____

APPROVAL MUST BE BY MGR. OR SUPT. OR ONE DULY AUTHORIZED.

FIGURE No. 82.—This is the reverse side of copy of order which is sent to receiving department.

orders are issued both in New York and by the branch offices which apply on these contracts.

The order form used by the branch offices is shown

FORM 878
(REVISED JULY, 1918)

OTIS ELEVATOR COMPANY

PURCHASE ORDER

OFFICE

DATE

THIS NUMBER

NAME

NO.

ADDRESS

MUST APPEAR ON BILL OF LADING, SHIPMENTS AND INVOICE

PLEASE DELIVER TO

FOR

BY

NO.

ORIGINAL

	QUANTITY AND DESCRIPTION OF GOODS WANTED

ORDERED BY	APPROVED BY

FIGURE No. 83.—Purchase order form used by branch offices.

in Figure 83. If the concern with whom the contract is made has local stocks in the cities where branch offices are located, the material is supplied from there,

FORM 103

OTIS ELEVATOR COMPANY
OFFICE OF
PURCHASING AGENT

REQUEST
FOR
QUOTATION

NEW YORK

_____

PLEASE QUOTE ON THIS SHEET YOUR BEST PRICE F O B _____

FOR THE ARTICLES SPECIFIED BELOW AND STATE HOW SOON YOU CAN FURNISH THE SAME

BID ON EACH ITEM SEPARATELY DO NOT FAIL TO SIGN THIS BID

TOTAL

SIGNATURE _____

ADDRESS _____

REQUISITION
No. _____

PURCHASE ORDER
No. _____

FIGURE No. 84.—Form used in obtaining quotations.

or from the nearest shipping point. A copy of this order is sent to the purchasing department in New York, where a record is kept of the total amount of material obtained on account of the contract.

FORM 654

FOLLOW UP ON MATERIAL ORDERS

TO _____ DATE _____

_____

_____

PLEASE ADVISE BELOW WHEN YOU WILL SHIP MATERIAL SPECIFIED ON OUR ORDER

DATE _____

OUR NO _____

YOUR NO _____

SHOP NO _____

OTIS ELEVATOR COMPANY

_____ OFFICE

REPLY (DO NOT DETACH FROM ABOVE)

DATE _____

WE WILL FURNISH ABOVE MATERIAL

SIGNED _____

FIGURE No. 85.—This form is used in following up orders and obtaining from sellers information as to date of shipment.

The branch offices are advised of all contracts made, and all changes and modifications which take place from time to time. As they are engaged in local erection, construction, and repair work, it is an important advantage for them to be able to secure the benefits of these contracts. They are placed in the same position as the largest buyers for such material as they need locally and which can be covered by agreements of this kind. Contracts of this character, which can be arranged by the purchasing agent, are important factors in the general economic operation of the corporation's undertakings.

The invoices for all factory purchases go first to the purchasing department in New York, where they are compared with the order and sent to the factories for approval. A record of the receipt of material is made by the receiving department on the reverse side of their copy of the purchase order (see Figure 82). This copy of the order is then attached to the invoice and returned to the purchasing department. It will be noticed that Figure 82 covers all the necessary data connected with the invoice, such as classification, freight charges, etc. A slip is attached to invoices calling attention to cash discounts, and each person handling them must perform his work to enable payment to be made on date specified. After prices have been checked, the invoices are passed to the accountant's office.

These are the salient features connected with the purchasing system of this undertaking. There are many details associated with it, as there is with any similar work. There are also forms used between the factories, branch offices and purchasing department which it is unnecessary to give here.

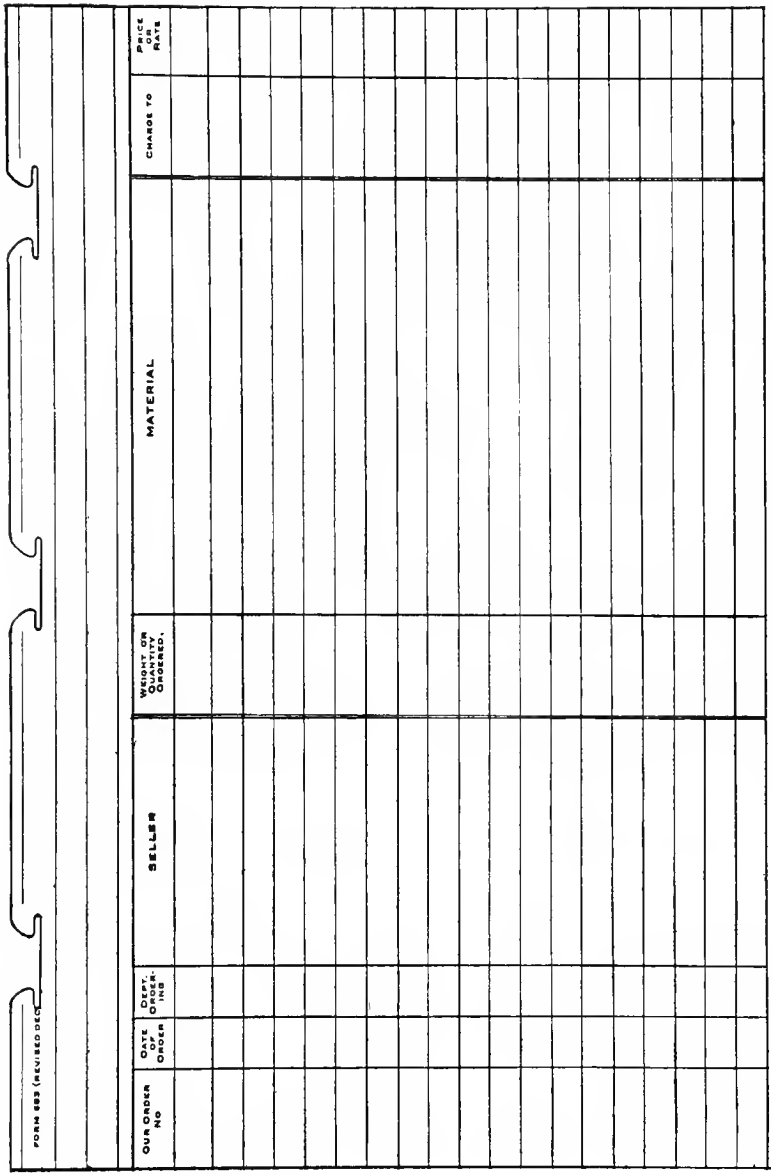


FIGURE No. 86.—Purchase order record.

CHAPTER XIV

Purchasing for Construction Work and Operation of Properties in Widely Separated Localities

THERE are conditions existing in the work of purchasing which are not covered by the descriptions given in either of the two preceding chapters. As pointed out in earlier portions of this book, there are certain fundamental principles connected with buying which are common to it whenever and wherever its functions are exercised. The methods employed, however, have to be adjusted to meet the varying conditions which surround the work.

The writer has in mind one of the largest engineering concerns in the country with whose purchasing he had the good fortune to be connected. This company has carried out construction contracts in practically every state in the Union, also in Cuba, Central America, the Philippine Islands, and its allied companies have executed contracts in all parts of the world.

They also act as managers and operators of public utility undertakings and many other enterprises, both at home and abroad. In addition to these important functions, there are many companies who find it advantageous to employ them to act as purchasing agents for them on account of the excellent facilities they possess for satisfactorily taking care of such work.

From this short résumé of the activities of the corporation, it can be easily understood that the work of purchasing all the requirements connected with so many undertakings is an exceptionally intricate problem. The proper performance of the work of buying where the conditions and circumstances vary so greatly involves something radically different from the examples given in the two last chapters.

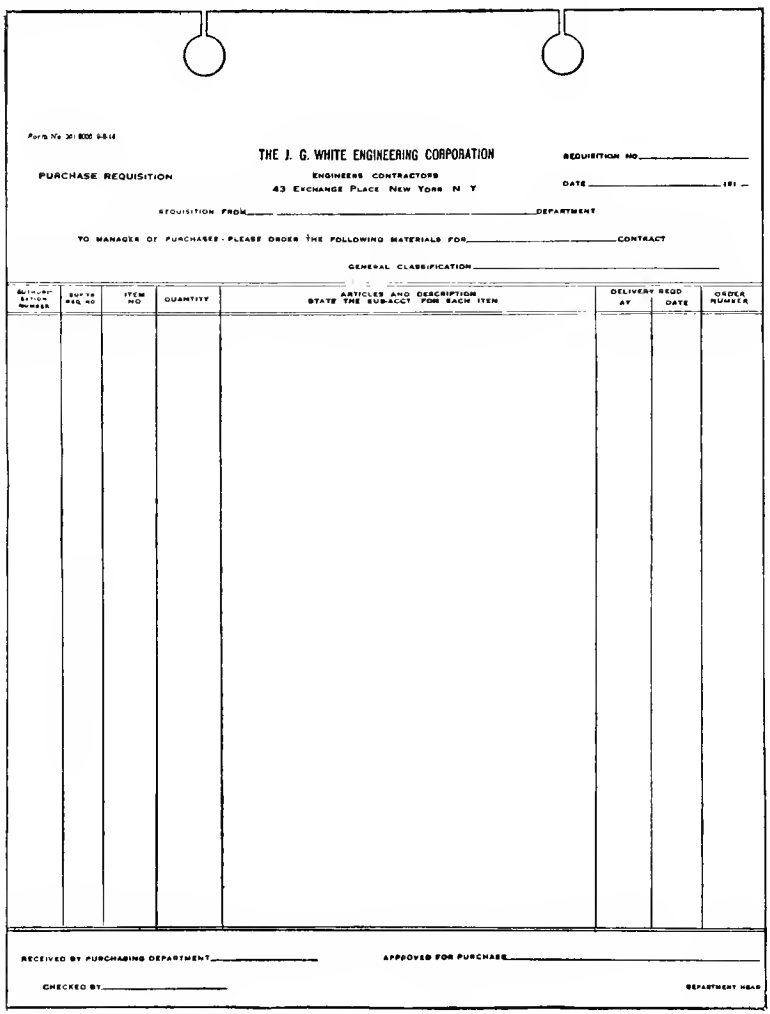
The information which reaches the purchasing office and which primarily forms the basis for the purchase may be in a very incomplete and crude form. This necessitates the apportioning of the work connected with the requisition to an experienced man, who takes all the information furnished and beats it into shape.

The requisition form used (see Figure 87) is much larger than those previously shown, and the clerk in charge has to write up the requisition specifying and minutely describing every detail and particular requisite to insure the purchase being made and the material shipped exactly in accordance with the requirements of the customer for whom they are acting as purchasing agents, or as needed for the execution of work on contracts for construction or operation.

In considering a requisition such as this, the nature and character of the purchases as already outlined must be taken into consideration. It is a foregone conclusion that when the material is to be shipped, perhaps half-way round the world, special care must be taken in making the purchase and having every detail connected with it and its shipment absolutely correct.

All the work connected with traffic problems in this establishment is an integral part of the purchasing department, and all the particulars as to manner of

packing, routing, etc., have to be decided by the traffic clerk if not unequivocally specified by the consignee, and even then is subject to this checking and approval.



Form No 301 8000 9-8-14

THE J. G. WHITE ENGINEERING CORPORATION

ENGINEERS CONTRACTORS

43 EXCHANGE PLACE NEW YORK N Y

PURCHASE REQUISITION

REQUISITION NO _____

DATE _____ 191 —

REQUISITION FROM _____ DEPARTMENT

TO MANAGER OF PURCHASES - PLEASE ORDER THE FOLLOWING MATERIALS FOR _____ CONTRACT

GENERAL CLASSIFICATION _____

AUTHORIZATION NUMBER	SUP'TR REQ NO	ITEM NO	QUANTITY	ARTICLES AND DESCRIPTION STATE THE SUB-ACCT FOR EACH ITEM	DELIVERY REQD AT	DELIVERY REQD DATE	ORDER NUMBER

RECEIVED BY PURCHASING DEPARTMENT _____ APPROVED FOR PURCHASE _____

CHECKED BY _____ DEPARTMENT HEAD

FIGURE No. 87.—Requisition form.

Trivial purchases, such as frequently occur in local construction and manufacturing work, are not as general in transactions of this purchasing department, but they are large and important and practically all of them are subject to inspection when shipments have to be made great distances. It is easily conceivable that there must be positive safeguards against shipping wrong material, and an endeavor has been made, therefore, to show the necessity of preparing the requisitions so that all questions as to proper description of material, its inspection and routing are adequately covered and accurately specified.

In an office handling such a varied assortment of purchases, the information on file is naturally extensive and diversified. It is not possible, however, nor could it be expected, that the department should know where to buy to the best advantages everything embraced in its multitudinous activities. Nevertheless, it must be in a position to obtain at short notice such information as is essential to enable it to make the purchase intelligently and satisfactorily of anything unusual which it is called upon to buy. As an illustration, the writer remembers having to investigate and find a market in which to purchase machinery for harvesting rice and hemp and preparing them for commercial use. This transaction was for the Philippines, while at the same time mules were being bought for construction work in Tennessee and locomotives for Cuba.

In its completed form and when properly approved, the requisition is ready to be dealt with by the purchasing agent, who scrutinizes it closely, for the magnitude and importance of the expenditures in-

volved would, as already pointed out, entail severe losses, trouble, and inconvenience to both the purchaser and the consignee if the transaction was not properly carried through in consequence of the requisition being carelessly or incorrectly written up.

It is necessary also to verify the authorization of the purchase, and that it is validated by the existing agreements or arrangements for carrying out construction work, management, or operation of properties, or in the performance of the function of purchasing agent for corporations who have not got the requisite facilities for doing such work to the best advantage.

The requisition is then handed to the price clerk who writes up and sends out the invitations to tender. The work in connection with this phase of the purchase, also in comparing quotations and final negotiations before placing the order, does not differ materially from similar work as related in previous chapters. This is also the case with all the features pertaining to the following up of the order, inspecting of the material, and shipment to customer.

A few of the forms used in carrying through the routine work of the department are illustrated in the following pages. The nature of the particular section of the work in which they are used can readily be gathered from an examination of the forms themselves and it is not necessary to detail the method of handling each one.

The system of filing the papers in one of the transactions of the character described has to be radically different from that used by the Underground Railways, where over one hundred orders were frequently issued in one day, many of them having no

Form No. E 303 P. A. 3M 1-13-14

THE J. G. WHITE ENGINEERING CORPORATION,
ENGINEERS, CONTRACTORS,
—PURCHASING AGENTS—
43 EXCHANGE PLACE NEW YORK, N. Y.

REQ. NO.

ORDER NO. _____

DATE _____ 19__

ORDERED FOR _____

ORDER

TO _____

_____

_____

PLEASE FURNISH THE FOLLOWING ARTICLES SUBJECT TO THE CONDITIONS STATED HEREIN

MARKS

CONSIGNED TO _____

CARE OF _____

VIA _____

SHIPMENT MUST BE MADE WITHIN _____ FROM DATE

CONDITIONS	ITEM NUMBER	QUANTITY	ARTICLES AND DESCRIPTION
1. If shipment cannot be made by date specified, notify us at once			
2. Order number must be shown on all shipping documents, invoices and correspondance.			
3. Invoices, as specified below, must be sent to this office as soon as material is shipped from your works. All goods from manufacturers in Greater New York, should be held pending receipt of shipping instructions.			
4. All material furnished must conform with our SPECIFICATIONS when indicated, and if not in accordance therewith, same will be held at your risk, awaiting disposition. Shippers must pay all transportation charges both ways on all rejected material.			
5. Inspection by us before shipment does not relieve shipper or manufacturer from responsibility of furnishing material strictly in accordance with specifications.			
6. All material must be packed securely. Breakage or damage will be charged to shipper			
7. No charges allowed for packing, reels or cartage unless specified on this order.			
8. Form below must be detached, filled out and forwarded to us immediately.			
9. No drafts will be honored.			
10. Railroad bill lading showing proper classification, full routing, car number, weights and rates must be sent to (as indicated at top of this order) as soon as shipment is made.			

REQUIRED { _____ COPIES OF INVOICE
COPIES OF PACKING LIST

TERMS OF PAYMENT _____

YOURS VERY TRULY

THE J. G. WHITE ENGINEERING CORPORATION,
—PURCHASING AGENT—

PER _____

DETACH AND MAIL AT ONCE TO

THE J. G. WHITE ENGINEERING CORPORATION,
43 EXCHANGE PLACE
NEW YORK

ORDER NO. _____

RECEIPT OF THE ABOVE ORDER IS HEREBY ACKNOWLEDGED. WE ACCEPT THE ORDER AS SPECIFIED.

SIGNED _____

DATE _____ 19__

FIGURE No. 88.—Purchase order form.

papers, correspondence, or documents connected with them to be preserved. But with such orders as these the number is comparatively small, but frequently includes a voluminous quantity of correspondence,

Form E 304 W 10M 5-1-14

THE J. G. WHITE ENGINEERING CORPORATION
ENGINEERS, CONTRACTORS
43 EXCHANGE PLACE, NEW YORK, N. Y.
COPY OF ORDER

REQ NO _____

MATERIAL HAS BEEN ORDERED

FROM _____

COPY FOR _____
ORDER NO _____
DATE _____ 19 ___
ORDERED FOR _____
CHARGE _____
GENERAL CLASSIFICATION _____

CONSIGNED TO _____
CARE OF _____
VIA _____
SHIPMENT MUST BE MADE WITHIN _____ FROM DATE

SHIPMENTS MADE						
DATE OF INVOICE	S. S. OR STEAMER	DATE	QUANTITY	ITEM NUMBER	QUANTITY	ARTICLES AND DESCRIPTION

FIGURE No. 89.—Copy of purchase order retained in office showing method of recording invoices.

memorandums, quotations, etc., which for easy reference must be kept together. Therefore all papers relating to the order, together with requisition, from

Form No. 328 8000 1 29-18

THE J. G. WHITE ENGINEERING CORPORATION
ENGINEERS CONTRACTORS
43 EXCHANGE PLACE
NEW YORK.

_____ 19

_____

_____

_____

GENTLEMEN:

ORDER No._____ CONTRACT_____

Please refer to our order of the above number and place hereon, in space allotted below, your very best quotation covering the items included in the order.

Yours very truly,

THE J. G. WHITE ENGINEERING CORPORATION
E. N. CHILSON
MANAGER OF PURCHASES

By_____

THE J. G. WHITE ENGINEERING CORPORATION

GENTLEMEN:

We quote below our very best prices covering the items mentioned on your order of the above number.

Item No.	Unit Price	Total Price

Yours very truly,

_____

FIGURE No. 90.—When an order has been issued without first ascertaining the price, this request is sent to the party holding the order.

the initial stage to its final completion, are kept in a folder. Such a scheme is not feasible or practicable

Form No. 313A 500. 12-3-10

Prints and Specifications to be sent out

To Engineering Department Date..... Number.....

Order has been placed with.....

For.....

To be used on the.....job

Please see that all the Prints and Specifications covering this work are sent immediately.

.....

Purchasing Department.

Domestic Prints

To Purchasing Department Number.....

Prints and Specifications have been forwarded to.....

.....

For.....

To be used on the.....job

Date..... .....

Engineering Department.

Figure No. 91.—When an order is placed which requires blue prints and specifications this form is sent to the engineering department.

when very large numbers of orders are issued which have few or no papers connected with them to be preserved.

FORM NO. 317. 2M-4-12-11.

INSPECTION NOTICE

CONTRACT..... ORDER NO.....

ENGINEERING DEPARTMENT
OFFICE DATE.....

MANUFACTURER ADVISES THAT MATERIAL ON THE ABOVE ORDER WILL BE / IS READY FOR INSPECTION AT.....

..... DATE.....

PURCHASING DEPARTMENT

BY.....

INSPECTION NOTICE

CONTRACT..... ORDER NO.....

PURCHASING DEPARTMENT
OFFICE DATE.....

WE WILL ARRANGE FOR / WAIVE INSPECTION OF MATERIAL ON THE ABOVE ORDER.

ENGINEERING DEPARTMENT

BY.....

FIGURE No. 92.—When inspection has been specified on order, this form is sent to engineering department.

Form 307-2000-1-25-18

ORDER TRACER.

THE J. G. WHITE ENGINEERING CORPORATION
ENGINEERS CONTRACTORS
43 EXCHANGE PLACE,
NEW YORK

RUSH

NEW YORK, _____

_____

_____

SIRS: _____

ORDER NO. _____ CONTRACT _____

WE MUST BE ADVISED IMMEDIATELY WHEN YOU PROPOSE MAKING SHIPMENT OF THE MATERIAL CALLED FOR

YOURS VERY TRULY,
E. N. CHILSON
MANAGER OF PURCHASES

IF ANY OF THE ABOVE HAS BEEN SHIPPED, PLEASE ADVISE:

DATE OF SHIPMENT _____ SHIPPING POINT _____

CAR INITIALS AND NUMBER _____ VIA _____

EXPRESS _____

REMARKS:

_____

_____
SHIPPER.

DATE _____ 19

Figure No. 93.—Form used in requesting information regarding shipment of order.

Form No. 331—2000-6-3-14

MEMORANDUM

TO

ORDER FOLLOW-UP CLERK

ORDER WAS PLACED { BY LETTER / BY TELEPHONE / VERBALLY

DATE_____

WITH_____

MATERIAL_____

CONTRACT_____

SHIPMENT DUE_____

SIGNED_____

Note.—This memorandum is for temporary use in following shipments. After regular order is issued and card is made up, the order number is to be noted below and this memorandum will be filed with the order.

COVERED BY ORDER NO._____

FOLLOW UP RECORD

FIGURE No. 94.—When an order has been placed verbally and before the official order is issued, this form is used for temporary follow-up purposes.

MEMORANDUM FOR FIELD OFFICE

_____ DATE_____

CONSTRUCTION OFFICE

_____

GENTLEMEN

Order No._____ Contract_____

Shipment of material covered by our order of the above number has been MADE/PLACED as follows:—

FIGURE No. 95.—Advice to construction office regarding shipment of material.

THE J. G. WHITE ENGINEERING CORPORATION
ENGINEERS CONTRACTORS,
43 EXCHANGE PLACE
NEW YORK

191.

To

Please deliver to S.S._____

now loading at_____

_____for shipment to_____

Please have all packages marked in full, as per instructions given in our order, take receipt in our name and forward to us when delivery has been made.

Please number packages as follows:

Yours truly,

Manager of Purchases.

FIGURE No. 96.—Advice to supplier regarding shipment of an order by steamship.

FORM NO. 285 500-9 10-13

THE J. G. WHITE ENGINEERING CORPORATION
ENGINEERS CONTRACTORS
43 EXCHANGE PLACE,
NEW YORK

IMPORTANT

NEW YORK_____191

TRACER REQUEST

TO_____

GENTLEMEN:

PLEASE WIRE TRACE SHIPMENT FORWARDED_____

FROM_____ TO_____

VIA_____

CONSISTING OF_____

AS WE ARE ADVISED BY CONSIGNEE UNDER DATE OF_____

THAT SHIPMENT HAS NOT YET BEEN RECEIVED. PLEASE ADVISE IMMEDIATELY BY TELEPHONE OR TELEGRAPH

WAY-BILLING REFERENCES, CONNECTING LINES, DATE OF DELIVERY, ETC

Very truly yours,

THE J. G. WHITE ENGINEERING CORPORATION

E. H. CHILSON, MANAGER OF PURCHASES

PER_____

FIGURE No. 97.—Tracer request. One of the forms used by the traffic clerk.

Form No. 3201-22-13

THE J. G. WHITE ENGINEERING CORPORATION
ENGINEERS CONTRACTORS
43 EXCHANGE PLACE
NEW YORK

PURCHASING DEPARTMENT

_____ 19

_____

_____

_____

GENTLEMEN:

ORDER No. _____ CONTRACT _____

We return herewith your invoices as follows:

Number	Date	Amount

Please follow invoicing instructions on order of the above number, forwarding invoices and copies in accordance therewith.

Yours very truly,
THE J. G. WHITE ENGINEERING CORPORATION
E. N. CHILSON
MANAGER OF PURCHASES
By _____

FIGURE No. 98.—When invoices are not rendered in accordance with instructions they are returned with this notice.

Form No. 221 5000 10-20-13

MEMORANDUM FOR FIELD OFFICE

INVOICES

DATE.....

CONSTRUCTION OFFICE

GENTLEMEN:

ORDER No. ..... CONTRACT.....

We attach hereto .....

of the following invoices to be treated in the usual manner.—

Shipper	Invoice Date	Invoice Amount

Discount of.....% applies if payment is made within .....days from.....

Very truly yours,

E. N. CHILSON

Purchasing Agent

By.....

FIGURE No. 99.—Form used in sending invoices to construction offices for approval.

Form No. 310. 1908 14-7-14.

CONTRACT_____ MONTH_____191__

	ORDER NO.	DATE	SHIPMENT DUE	SHIPMENT MADE	FINAL SHIPMENT	PLACED WITH	MATERIAL	COST	COMPLETED	REMARKS

FIGURE No. 100.—Purchase order record.

Form No. 320, 1000-3-30-14

INVOICE REGISTER

MONTH OF _____ SHEET NO. _____

INVOICE RECEIVED	DATE OF INVOICE	INVOICE NUMBER	INVOICE RENDERED BY	AMOUNT	RENDERED TO	ORDER NO.	CONTRACT	APPROVAL SENT TO	DATE RETURNED	DATE PASSED	RECEIVED BY

FIGURE No. 101.—Invoice register.

CHAPTER XV

Purchasing for a Small Manufacturing Plant

IN a small manufacturing plant the conditions surrounding the purchasing and store keeping differ somewhat from those previously related. The following brief explanation will serve to illustrate the main features of the system adopted. Owing to the size of the plant and the limited amount of clerical assistance, it had to be simple in the extreme and yet meet the problems of purchasing and store keeping satisfactorily. On this account the forms used were limited in number and any features which might lead to complications or enlarge the work were avoided.

The storeroom was in charge of a man who was honest and reliable, but who was not capable of keeping any of the stores accounting records, which were all kept in the main office. He had no authority to issue purchase requisitions, he received material and supplies, stored them, and delivered them on foremen's requisitions as required, doing the physical work himself with an assistant. If any additional temporary help was needed it was drawn from the shop.

When a production order was issued, the superintendent or his assistant made out a purchase requisition, Figure 102, for the material required. This was in duplicate and both original and copy were sent to the office. Here it was checked up with the stores

FORM 103

PURCHASE REQUISITION

DATE _____ REQUISITION NO. _____

REQUIRED FOR _____ PURCHASE ORDER NO. _____

DATE WANTED _____ ORDERED FROM _____

DESCRIPTION OF MATERIAL

SIGNED _____

FIGURE No. 102.—Purchase requisition.

perpetual inventory to see whether any of the material in stock could be used for this order. It was then numbered with an automatic numbering stamp and investigations were made as to prices, etc. After the order was placed, the original was kept in the office and the copy returned to the superintendent. On both of them the order number and name of seller were inserted. This fitted in better with the superintendent's method of keeping his records than if a copy of the purchase order had been sent to him, which would only have meant to him an unnecessary addition to his clerical work.

Requisitions for supplies for the shop were issued by the superintendent's assistant when he was notified by the office or by the storekeeper that the stock was running low and had reached the limit fixed. When new machinery was designed, the drafting room made

FORM 128

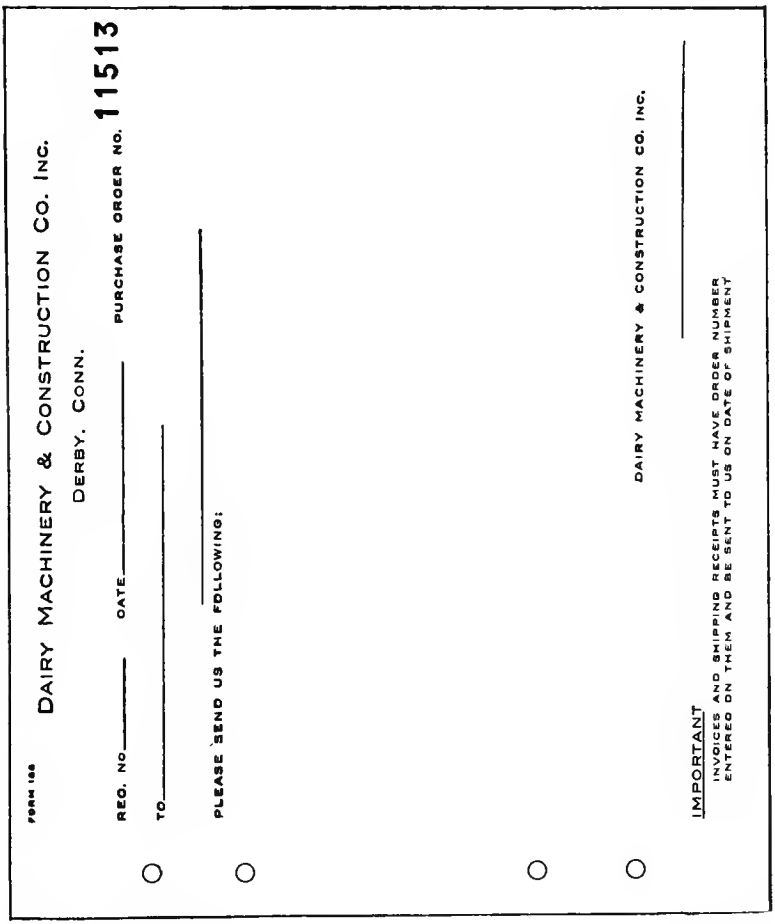
MATERIAL

PURCHASED FROM	DATE	ORDER NO	DESCRIPTION	PRICE	PER

FIGURE No. 103.—Card for recording prices of material with names of suppliers and order numbers.

out a bill of material and a requisition for it at the same time. These requisitions came into the office and were dealt with in the same manner as those from the superintendent.

A record of quotations and prices paid for previous purchases was kept on a card index, Figure 103. Reference was made to this to ascertain the latest


FORM 188

DAIRY MACHINERY & CONSTRUCTION CO. INC.

DERBY, CONN.

REQ. NO. _____ DATE _____ PURCHASE ORDER NO. 11513

TO _____

PLEASE SEND US THE FOLLOWING: _____

DAIRY MACHINERY & CONSTRUCTION CO. INC.

_____

IMPORTANT
INVOICES AND SHIPPING RECEIPTS MUST HAVE ORDER NUMBER ENTERED ON THEM AND BE SENT TO US ON DATE OF SHIPMENT

FIGURE No. 104.—Purchase order form.

price and if no recent quotations had been received, inquiries were sent out for best prices and shipping dates. When a satisfactory price had been secured and shipment promised early enough for the proper execution of the production order, the regular purchase order was issued, Figure 104. A copy of this order was sent to the storekeeper (no price was inserted on this copy); a copy was also kept in the office and bound in a metal post binder.

When the invoice was received, it was checked with the order and a memorandum of the date of invoice, quantity shipped, and amount of invoice was en-

FORM 106

FROM _____ DATE _____

PURCHASE ORDER NO.	QUANTITY RECEIVED	DESCRIPTION OF MATERIAL

RECEIVED AS ABOVE _____

QUALITY APPROVED _____

PRICE EXAMINED _____

EXTENSIONS CHECKED _____

CHARGE TO	AMOUNT

STOCK RECORD APPROVED

FIGURE NO. 105.—Approval form for invoices.

tered on the face of the copy of the order in the office. This was found an effectual check against approving two invoices for the same material. It also prevented more goods being delivered than the order called for. These are two things which need close watching in both small and large establishments. It is a practice of the accountants for large concerns to take all properly approved invoices and make a voucher for them. They may have no effectual means of detecting or knowing that two of them are duplicates. It is entirely up to the purchasing agent to prevent this with proper safeguards. In a small business the same trouble occurs because the bookkeeper takes all invoices as they are approved and enters them in his ledger irrespective of dates. At the end of the month a pay statement

FORM 118

DATE	ORDER NO.	MATERIAL	DATE	ORDER ND.	MATERIAL

FIGURE No. 106.—Index card for orders, the supplier's name being inserted at the top.

with list of invoices is made out and not being in order of dates it is not noticed that there are two invoices of the same date and amount. The most effectual method of preventing duplication of this kind is to enter the invoice on the copy of the order in the office. Investigations were then made to see if any questions had arisen regarding the quality which would appear when it was checked against the material-received sheet. It was also checked for price, the extensions were checked, and it was finally approved on a form as shown in Figure 105.

A record of prices was kept on cards similar to Figure 103 and an index was kept of orders placed on a form as shown in Figure 106. The copies of unfilled orders were kept separate from the completed orders and as they were comparatively few a general tickler system was not necessary, as notes could be easily made of follow-up movements on the copies of the orders themselves.

The stores system in connection with this plant was simple in the extreme. The man in charge did no clerical work except make out a list of the material and supplies received on account of purchase orders. A copy of this order was given to him at the time it was issued; he knew therefore what goods were on order, when to expect them, and could stop any coming in which were not properly ordered.

The method of procedure was as follows: The material arrived daily from various sources and on arrival was checked, weighed, and examined by the storekeeper, the copy of the purchase order having of course been referred to. He then entered these items on the material-received sheet, which was sent into the

office every day. He had various shipping memoranda and delivery tickets which came with the goods. These he kept for a time in case any question should arise as to quantities, etc., when invoices were checked.

During the day the storekeeper was called on continually to deliver goods from the storeroom to various departments. This was done by requisition, Figure 107, signed by the foreman. The first thing the storekeeper did on receipt of this requisition was to number it in the top right-hand corner with an automatic numbering stamp. He then handed out the material and signed the ticket below the foreman's signature. The requisitions were placed in a box and sent into the office daily. The object of numbering them was

FORM 101

REQUISITION ON STOCKKEEPER

ORDER NO._____ DATE_____ NO._____

PIECES	FEET	POUNDS	MATERIAL

ENTERED IN STOCK BOOK_____ FOREMAN_____

CHARGED TO ORDER_____ STOCKKEEPER_____

FIGURE NO. 107.—Foreman's requisition on storekeeper.

that it proved to the office that if the requisitions were numbered in proper sequence none were lost after material was given out. The foremen could not be depended upon to send copies of requisitions to the office to check with the originals as is frequently done. It was essential therefore that close track be kept of them.

Material returned to stores was recorded in a similar manner, the foremen sending credit memorandums to the storekeeper (see Figure 108).

On arrival in the office these requisitions were charged against the production order and also entered on stores record, Figure 109, which was a loose-leaf sheet. They were then tied in bundles and kept

FORM 163

CREDIT

GOODS RETURNED TO STOCK ROOM FOR CREDIT

ORDER NO._____ DATE_____ NO._____

PIECES	FEET	POUNDS	MATERIAL

ENTERED IN STOCK BOOK_____ FOREMAN_____

CREDITED TO ORDER_____ STOCKKEEPER_____

FIGURE No. 108.—Foreman's credit requisition for material returned to stores

FORM 102

MAXIMUM _____ DRAWING NO. _____ SHEET NO. _____

MINIMUM _____ PATTERN NO. _____ PRICE _____

RECEIVED						DELIVERED								
DATE	ORDER	QUANTITY	DATE	REQ. NO	QUANTITY	BALANCE	DATE	REQ. NO.	QUANTITY	BALANCE	DATE	REQ. NO.	QUANTITY	BALANCE

FIGURE No. 109.—Perpetual stores record.

until there was no possibility of any need to refer to them again.

For the size of the establishment a large number of patterns were in use. A record of these was kept on cards, one being a record of the pattern itself, Figure 111; this was a buff card. The other was light blue, Figure 112, and was used for keeping a record of the foundry the patterns were sent to. Enough particulars are shown in the illustrations of these to make them self-explanatory.

FORM 104

DATE_____191__

TO THE SUPERINTENDENT,

THE STOCK OF_____

PATTERN NO._____NOW STANDS AT_____

THE MINIMUM BEING_____. IT TOOK_____

TO GET DELIVERY OF LAST LOT PURCHASED.

_____

FIGURE No. 110.—Storekeeper's notice to superintendent of low stock.

FORM 129

PATTERN NO. ..... | NUMBER OF PIECES IN THE PATTERN .....

DRAWING NO. ..... | NUMBER OF CORE BOXES .....

NAME OF PATTERN .....

.....

.....

.....

.....

OTHER PARTS TO BE AFFIXED TO THIS PATTERN .....

.....

.....

STORED IN SHELF NO. .....

FIGURE No. 111.—Card for keeping record of patterns.

FORM 130

PATTERN NO.....IN SHELF NO.....

NAME OF PATTERN.....

DATE SHIPPED	FOUNDRY	DATE RETURNED	DATE SHIPPED	FOUNDRY	DATE RETURNED

FIGURE No. 112.—Companion card to Figure No. 111 for recording movements of patterns.

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